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COMPUTERWORLD

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Train wreck at DEC

Losses, layoffs derail comeback express

By Jaikumar Vijayan and Mindy Blodgett

Digital Equipment Corp.'s latest round of job cuts, announced last week amid warnings of a disappointing fourth quarter, has heightened user concerns about the company's ability to sustain its recent turnaround.

As a result of lower-than-anticipated profits for the period ended June 30 — attributed to slow PC sales and sluggish European revenue — the Maynard, Mass., company last week said it would take a charge of $475 million and cut 7,000 jobs worldwide. Digital is expected to close the year $170 million to $200 million in the red.

Borland, Sybase and Quarterdeck struggle with revenue shortfalls; Compaq revamps for success. See stories, pages 4, 8 and 32

Despite Digital's cost-cutting efforts, it still must address long-term issues related to channel strategy, its struggling PC business and a growing feeling of alienation among a small but key sector of its installed base, observers said.

"It's like the lights are on, but nobody is home," said Ed James, manager of computer and communications services at Lockheed Martin Laboratories in Baltimore. "They've just got to figure out what the strength of the company is and go for it."

Digital, *page 15*

The vision guy

Steven Rossi

"They say if you want to be a leader, find a parade and get in front. The Internet is our parade."

— Jim Barksdale

By Kim S. Nash

CW Profile

Jim Barksdale, Netscape Communications Corp.'s CEO, is arguably the most powerful man on the Internet. His 2-year-old firm specializes in making World Wide Web servers and browsers — and making Microsoft darn crazy trying to trump its young Internet rival. Ever the polite Southern gentleman, Barksdale is a listener, not an egotist. He is also fond of saying that in his combined 16 years at FedEx and McCaw Cellular, he bought more software and hardware than any computer company CEO.

You don't find many Silicon Valley entrepreneurs brushing up on Civil War history while preparing to woo

The vision guy, *page 121*

Microsoft draws bead on IS with Visual C++

By Sharon Gaudin

Microsoft Corp. is getting ready to rush the line in the corporate developers market as it tries to gain ground for Visual C++.

At its Visual C++ Developers Conference, which kicks off July 22 in San Francisco, the software giant will announce and ship a new version of Visual C++ and a new C++ product geared toward SQL database programmers, *Computerworld* has learned.

Another version of Visual C++ is slated for delivery next year. Once the products are out, Microsoft will launch a worldwide tour of training seminars for corporate developers.

Not very popular

Visual C++ is Microsoft's flagship language for its internal software development. But it hasn't made the leap into popularity with corporate developers.

Some developers complained the product is too hard to use; others said it is overkill for most tasks.

Microsoft said it hopes to answer

Visual C++, *page 16*

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- Network planning is becoming a challenge as more employees tap resources on the Internet. See story, page 6, by *Kim Girard*.
- The wireless LAN market will get a much-needed boost from lower prices and a standard for interoperability. See story, page 6, by *Mindy Blodgett*.
- IBM last week introduced beta software to link Windows NT workstations to AS/400 servers. See story, page 12, by *Michael Goldberg*.
- Georgia Tech uses the Olympics as a springboard to an upgraded network. See story, page 69, by *Mindy Blodgett*.

Mainframers win ticket to ride client/server bus

By Julia King

Bill Nowlin

Palm Beach County's Stuart Galup: *'Our approach kept everybody working'*

This is a re-engineering story minus the usual chapter about laying off mainframe programmer dinosaurs.

By 1998, the government of Florida's Palm Beach County will spend a total of $34 million building a three-tier client/server architecture and migrating four dozen core mainframe applications that are 15 years old.

In the process, the county will ward off a looming year 2000 debacle and give users far greater access to data.

More important, it will retain its 150 mainframe-oriented programmers, and systems and network experts, who are charged with building and supporting the new systems.

At the heart of the

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dumber candidates

Dreamstime Davids

Max Messmer tells IS job seekers how to avoid resume suicide. See Computer Careers, page 97

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Inside Computerworld

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Jim Barksdale, Netscape Communications CEO, is arguably the most powerful man on the Internet. But the 52-year-old is like no other Silicon Valley leader, at least so far.
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Staking a name
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www.computerworld.com/cw_digest

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Surfing the 'net is addictive, but the Web is becoming crucial for some jobs. How are managers protecting employees – and themselves – from compulsive surfing? Join Daniel P. Dern in this debate.
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Patent watch

These recently issued U.S. patents were gleaned from MicroPatent's Patent Server at www.micropat.com. (Patent number, inventor/assignee, date issued)

- A data mining and analysis system that evaluates the commercial success or popularity of a particular fashion product such as jewelry. (5,526,257, Finlay Fine Jewelry, June 11)
- A vending machine that dispenses diskettes or CD-ROMs to sell or rent. Payment can be made by credit card. (5,523,551, Sony, June 4)
- A tongue-activated controller that lets people with severe disabilities operate a computer or other devices. A tiny, waterproof keypad with multiple switches can be manipulated by the tongue inside the user's mouth. (5,523,745, Zofcom Systems, June 4)
- A Caller ID device that announces the identity of the caller in a synthesized human voice. (5,526,406, David J. Luneau, June 11)
- A method to help speech-recognition systems understand regional speech. A mobile computer uses a geopositioning satellite signal to determine the user's location. The computer then draws upon a database of place names, street names, proper names and businesses in that geographic area to improve the accuracy of the speech-recognition system. (5,524,169, IBM, June 4).

Good news for hopeless potatoes: The Mobot

The self-propelled Mobot *from Poulan/Weed Eater works best on lawns that are relatively flat*

Poulan/Weed Eater in Shreveport, La., has developed a solar-powered robot, called Mobot, that mows the lawn with three steel blades under its shell. It runs on 34 solar cells and identifies the yard's boundaries by detecting an underground, low-voltage perimeter wire. Mobot gently bounces off trees or lawn furniture and stops if it turns over.

Early users include the CIA in Langley, Va., but the vendor has pulled the product off the market temporarily to make some adjustments and reduce the $2,000 price tag.

Digital snafus

News reports said a computer software error caused Europe's Ariane-5 rocket to veer off course 37 seconds after liftoff June 4 and explode. The software sent incorrect orders to the rocket thrusters, causing the craft to twist, turn and tilt before breaking up from the stress. As fiery fragments of the satellite launcher came down, a French television commentator was heard saying, "All systems go" and "course correct." He was reading a delayed telemetry printout instead of looking out a window.

Century Plaza Hotel and Towers in Los Angeles has unveiled the Cyber Suite, a futuristic hotel room with the following features:

- A 37-in. "NetTV" that combines television and a multimedia, 166-MHz Pentium PC with CD-ROM.
- A wireless keyboard and Gyration's wireless remote mouse, which uses miniature gyroscope technology and has a range of 75 ft.
- An Integrated Services Digital Network connection and Internet access via Netcom and America Online.
- The Butler in a Box voice-recognition system to control the room's lighting, draperies, temperature and appliances by voice.
- The ability to call the Butler in a Box from a remote hotel telephone and order it to draw your bath at a certain temperature so it will be waiting for your return.

The strangest things appear in

Wanna get a shirt like this?

Losses, layoffs hit Quarterdeck

By Stewart Deck

After devouring a smorgasbord of acquisitions in the past year, Quarterdeck Corp. has indigestion.

The Santa Monica, Calif., company recently announced that it expects sharply lower sales and a "substantial" third-quarter loss. Wall Street estimates that loss will reach $5.7 million, compared with a $600,000 loss for the same period last year.

Quarterdeck also announced layoffs of more than 100 people — 11% of its workforce.

Did the PC utilities and Internet-tools company bite off more than it could chew after it spent more than $135.5 million for seven firms in the past year?

"We view the quarterly results as a hiccup," said Koen Bouwers, senior vice president of Quarterdeck's Internet Division. He said Quarterdeck took a hit from slow product sales of its QEMM 8 memory extension utility and ProComm Plus Internet data communications products.

Shipments suspended

Quarterdeck's sales channels became overloaded with the slow-selling products, Bouwers said, so the company will temporarily cease shipments of QEMM 8 and ProComm Plus to let the channels clear out.

Shipments of ProComm Plus and a new release of QEMM 8 will resume later this summer. The company will also stop selling its Internet Suite browser product and WebStar NT 95 World Wide Web server as stand-alone products.

Bouwers also cited the need to trim "duplicate functions" that have resulted from the recent spate of acquisitions.

This is hardly Quarterdeck's first loss. In 1994, the company suffered "a fiscal bloodbath," and acquisitions last year translated into third- and fourth-quarter losses, said Terrance McCrary, an analyst at Auerbach Pollak & Richardson, Inc. in Stamford, Conn.

According to Amy Wohl, an analyst at Wohl Associates in Narberth, Pa., "They're moving from being less of a memory products company and [into] more of a utilities and Internet products company. They've had a little stumble, but it appears to be simply a product and distribution timing problem."

Chris Shipley, editor and publisher of "PC Letter," a newsletter in San Mateo, Calif., agreed that the company is suffering from growing pains but said its swift response to disappointing earning results is a good sign.

Many industry and Wall Street analysts said Quarterdeck's expanding line of Internet products could make Quarterdeck a tasty morsel itself for a large applications vendor looking to beef up its Internet presence.

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Oracle Developer/2000
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Web craze spins IS planning frenzy

By Kim Girard

With thousands of employees jumping on the Internet and the CEO demanding an intranet, planning has become a huge challenge for corporate network managers.

In fact, the Internet and intranet phenomena have sent some network managers into a planning frenzy. Sears, Roebuck and Co. in Hoffman Estates, Ill., for example, recently launched a major study of its existing network, messaging systems and the impact of Internet technology.

"I'd rather have some idea of the Mack truck that's going to hit me than have the truck's tires across my back," said Stephanie Springs, senior systems director at Sears.

The retailer is gearing up to migrate from SNA to a frame-relay network and is working on its corporate World Wide Web site. Bandwidth, though not an issue now, will become a concern when employees begin to communicate over an intranet, Springs said.

Howard Hecht, president of Coalescence, a consultancy in Herndon, Va., said more network managers need to catch the Web-inspired planning bug.

For instance, they often don't realize the impact that intranet usage has on a peer-to-peer network, Hecht said.

"As soon as people build an intranet, they want to extend it to partners, clients, suppliers," he said. The draining impact on the server can be overlooked, he said.

The increase in Web use has taken a toll on the server at the University of Southern California in Los Angeles. James Weidel, director of networking, said he plans to overhaul the network backbone to get better performance.

Crum and Forster Insurance in Morristown, N.J., is testing dial-up Internet access for about 20 of its 1,800 users, who have also been trained recently to use Notes Suite. The company also plans to develop a Web page where insurance agents can access workers' compensation and claims information they normally get via mail. Work on an intranet will begin this year.

With that many projects in the works, long-term strategy is crucial, said Patty A. Crowley, the company's director of information technology services.

"We're careful to do things in the right sequence," Crowley said. "We look at the impact [that] one project will have on another." For example, employees will be trained in small groups before using the Internet to avoid bandwidth-hogging abuses, she said.

Audrey Apfel, research director at Gartner Group, Inc. in Stamford, Conn., predicted that increased use of the Internet and multimedia applications will cause a drastic jump in Web server outsourcing by 1998.

Prepare your Web server

	1995	1998*
Data downloaded per hit	20K bytes	300K bytes
Bandwidth required per user	14.4K bit/sec.	384K bit/sec.
Hits per day	10,000	100,000

*Projected

Source: Gartner Group, Inc., Stamford, Conn.

Bug causes AT&T switch itch

Some frame-relay users get flawed net management data

By Bob Wallace and Kim Girard

AT&T Corp. confirmed last week that a flaw in StrataCom, Inc. switch software has resulted in users of AT&T's popular frame-relay service being fed inaccurate network management data.

Network management

Both users and AT&T engineers began reporting the problem in the first quarter of this year, but installation of new software won't begin until September.

Although it wouldn't say how many of its frame-relay users have been affected, AT&T said less than 5% of the customers of its frame-relay network management service have had problems.

"AT&T definitely has a problem that they certainly need to fix, but the scary part is that this anomaly slipped through testing by StrataCom and AT&T," said Christine Heckart, director of broadband consulting at TeleChoice, Inc., a Verona, N.J., consultancy. "That shows that their system is not foolproof, and that is more of a concern than the corrupted data."

The offering in question, called Customer Network Management Services (CNMS), is important because users give up most network management capabilities when they move from private networks to carrier-based frame-relay service.

CNMS provides reports on network loading, performance — including lost data — and configuration. The reports are designed to help users with capacity management, network engineering and tracking.

CNMS also includes an option whereby users can dial in using a special interface to directly monitor network status and get performance data, including alarm notification, on a continuous basis.

Bob Brown, a senior technical specialist at Greyhound Lines, Inc. in Dallas, said he believes Greyhound's AT&T frame-relay network is fairly bulletproof despite the problem. He said he uses CNMS to do some network forecasting, but "it's not like we rely on this to tell us whether our site is up or down."

Source: Distributed Networking Associates, Inc., Greensboro, N.C.

But the problem takes on greater significance because users are moving en masse from private networks to frame-relay service (see chart), and they expect reliable network management information, Heckart said.

Bruce Tanzi, frame-relay product manager at AT&T, said the carrier has been unable to pinpoint which users have received flawed data, so it sent a letter last month to alert all CNMS users.

AT&T expects to have the corrective software in all its switches by early November, Tanzi said.

In the meantime, AT&T has been providing performance data gathered and reviewed by staff at its Network Operations Center to users who report that they have been affected, according to Tanzi.

Corrections

In "Lotus on upgrade snail trail" [CW, June 3], insurance brokerage and risk advisory firm Sedwick James, Inc. was incorrectly identified as law firm Sedwick & James.

*****

"IBM's DB2 makes its mark with improved OLTP performance" [CW, June 17] should have said IBM has added CASE programming statements in SQL. Due to an editing error, the story said IBM has added computer-aided software engineering statements in SQL.

Wireless LANs getting closer to mainstream

By Mindy Blodgett

Two of the barriers to wide acceptance of wireless LANs have been price and lack of standards. But those barriers may be on the verge of falling.

San Jose, Calif.-based OTC Telecom, Inc. last week announced a relatively cheap, wireless Ethernet bridge product that is the first sign that prices are starting to drop, industry analysts said.

Meanwhile, wireless communications vendors are expected to bless an interoperability standard this fall. That is prompting industry observers to predict that wireless LANs will become more popular and give users even greater price reductions.

"The technology is definitely getting cheaper," said Craig Mathias, an analyst at Farpoint Group, Inc., a consulting firm in Ashland, Mass. "And that is important for acceptance beyond the niche markets such as warehouses."

Sign of times

OTC Telecom last week announced the AirEzy wireless Ethernet bridge, with wireless data transmission links of up to 1M bit/sec. over connections separated by as much as two miles. There are faster products, but industry analysts said the price of AirEzy — $3,500 for links that can support more than 64 users — is a sign of falling prices.

Microwave and infrared technologies yield transmission speeds that are faster than AirEzy's Ethernet technology, but the former can also be very expensive. For instance, a microwave installation can cost as much as $75,000. Other wireless LANs, offered by companies such as Proxim, Inc. in Mountain View, Calif., can cost between $6,000 and $20,000 to install.

Users said wireless LANs are convenient for campus and company settings where installing cables would be impractical or too expensive.

AirEzy wireless Ethernet bridge:

- Provides point-to-point wireless links on a campus or in a large building
- Works with any existing Ethernet network
- Works with Windows NT, Windows 95 and NetWare
- Operates at radio frequencies between 902 MHz and 928 MHz, using spread-spectrum modulation

Steve Stavis, principal at Cabrillo Middle School in Santa Clara, Calif., uses AirEzy to link the physical education building to the rest of the campus. Teachers use wireless laptops to communicate with the rest of the school and to get on the Internet.

"This was a great way to link them up, and it has been working perfectly," Stavis said.

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Red ink at Borland, Wetsel steps aside

By Frank Hayes

Borland International, Inc. is in trouble again. The Scotts Valley, Calif., development tool vendor last week said it is losing money — as well as its CEO.

Three months after completing its first profitable year since 1991, Borland executives told analysts the company will lose more than $16 million in the quarter ended June 30. They also said Gary Wetsel resigned as president and CEO.

Borland is losing *more than money; CEO Gary Wetsel has resigned*

Borland's stock dropped 15% late last week, to $7.875 per share.

But Borland's financial trouble "is certainly not even close to what it was two years ago," said Mike Wallace, an analyst at UBS Securities, Inc. in New York. "They have $90 million in cash, and the health of the company is really not an issue."

And even after a tumultuous few years at Borland, users aren't fretting about the red ink. "My interest with Borland is in Delphi, and its acceptance with corporate America is pretty solid," said Chris Moreau, client/server development manager at Sara Lee Knit Products Corp. in Winston-Salem, N.C. If Borland collapses, "somebody will pick up [Delphi]."

The loss comes after lower-than-expected U.S. sales of Borland's development tools, including low-end versions of Delphi, Borland's visual development tool set, and Borland C++, said David Mullen, chief financial officer at Borland.

"A major factor in our overall revenue shortfall in desktop products continues to be the adoption rate of Windows 95," Mullen said. The slow corporate uptake of Windows 95 has reduced sales of Borland's Paradox database, he said.

To reverse the slide, Borland will offer free trials of Delphi and license C++ class libraries from Microsoft Corp., Mullen said.

The loss also seems unlikely to block Borland's pending acquisition of Open Environment Corp. in Boston. "They can't win the desktop war against Microsoft, so they need to move up to the enterprise," Wallace said.

Borland Chairman William Miller will replace Wetsel until a new CEO is found, company officials said.

Wetsel, who took over from Borland founder Philippe Kahn early last year, is credited with the company's temporary return to profitability.

Though he cut the work force by 40%, Wetsel remained popular with employees. He received a standing ovation when he addressed them for the final time last week, sources said.

Compaq shuffles divisions to shift focus beyond PCs

By Bob Francis and Justin Hibbard

PC powerhouse Compaq Computer Corp. shuffled its organizational cards last week in hopes of landing at the top of the computing deck.

The Houston company revamped its divisions into three — the Enterprise Computing group, the PC Products group and the Consumer Products group.

The Enterprise Computing group includes the company's server business, a new workstation group and network solutions. Its charter is to position Compaq as an end-to-end provider of distributed enterprise computing products.

Servers and PCs

The PC Products group combines the desktop PC and portable divisions under one umbrella. It will focus on small and midsize businesses. The Consumer Products group remains unchanged.

The primary thrust is that a separate enterprise group will more effectively target the application server and low-end Unix workstation markets, said Tom Rhinelander, an analyst at Forrester Research, Inc. in Cambridge, Mass.

While Compaq is successful at selling its servers, its challenge now is to battle companies such as IBM and Hewlett-Packard Co. that have worldwide organizations and even stronger high-end computing offerings, he said.

"I think Compaq's reorganization makes a stronger story for them to take to large users," Rhinelander said. Compaq had 34% of the PC server market last year, according to International Data Corp. in Framingham, Mass.. But the company needed to make some changes to move into the application and database server market.

Gary Stimac is leaving Compaq *after turning the PC server group into a powerhouse*

"Those users want bulletproof systems," said Cheryl Currid, president of Currid Consulting in Houston.

Analysts said the changes are in line with Compaq's desire to be seen as a computer company, not just a PC maker. "That's been their stated goal for some time, and this just reflects that with the emphasis on enterprise computing," Currid said.

No. 5 employee out

Left out of the revamp was employee No. 5, Gary Stimac, senior vice president and general manager of the server division. He was instrumental in developing the company's PC server group into a powerhouse.

Compaq officials said Stimac simply decided to leave the company. According to some analysts, that wasn't unexpected.

"I wouldn't read too much into it," said Vladim Zolotnikov, an analyst at Stanford C. Bernstein & Co. in New York. "They need someone to execute what Stimac put in place, and that's what they've done."

And though several technology companies have been hit with a spate of bad news lately, analysts don't expect Compaq to be affected when it reports its numbers later this month. "We're expecting them to come in with some pretty good numbers," Zolotnikov said.

News Shorts

U.S., IBM reach agreement on 1956 Consent Decree

The U.S. Justice Department and **IBM** last week reached a settlement that will phase out the remaining portions of the Consent Decree established 40 years ago to ensure competitiveness in the computer industry.

The remaining sections of the decree, which oeed to be approved by a U.S. District Court judge, will be phased out in the next five years. Those sections apply to IBM's mainframes and AS/400 minicomputers.

The main thrust of the 1956 Consent Decree required that IBM sell and lease computers, service computers and sell component parts.

Mac, PowerBook sales slide

In a survey of 1,000 computer sellers, **Computer Intelligence InfoCorp** in La Jolla, Calif., found that in April and May, sales of **Apple Computer, Inc.**'s flagship Macintosh dropped 30%, and PowerBook sales dropped 54% compared with last year's figures. Analysts warn that the sales slump, combined with the company's stock trading at its lowest level ever, may mean Apple is ripe for a buyout. Battling pressure from the outside, Apple's Chairman and CEO is making sure the everything's friendly inside. Gilbert F. Amelio last week hired the second of his former **National Semiconductor Corp.** colleagues, naming Ellen Hancock chief technology officer. Hancock previously was a vice president and chief operating officer at National Semicooductor for eight months. She also was a 28-year veteran of IBM. Hancock replaces David Nagel, who left in April to join Bell Labs.

Ellen Hancock

Internet providers shift focus

Internet service provider **UUnet Technologies, Inc.** and systems integrator **USConnect, Inc.** will jointly sell Internet services to businesses. Meanwhile, **PSInet, Inc.** will shift its focus from targeting consumers to selling Internet access to businesses and other Internet service providers.

UPS puts office locator online

In the battle between delivery giants **United Parcel Service** and **FedEx Corp.** to offer more online capabilities to customers, Atlanta-based UPS this week will one-up its rival in Memphis. UPS is set to give customers a new office locator feature at its World Wide Web site (www.ups.com). Online users who type in their ZIP codes at the site will get a list of the nearest package drop-off and pick-up locations, hours of operation and other services at each location.

SHORT TAKES The **X Consortium** will hand over the development responsibility for the X Window System technology to **The Open Group.** ... The Chicago-based **Society for Information Management** is forming six groups to study information systems management issues. For more information, contact Laura Gramling at (312) 644-6610. ... **BBN Corp.** announced it will sell its **BBN Domain Corp.** subsidiary to **ABS Capital Partners** for $36 million.

TO ANYONE ELSE THIS IS A FINISH LINE. TO US IT'S A STARTING BLOCK.

Lotus

Agency has little to show for $300M upgrade

By Gary H. Anthes
WASHINGTON

The Veterans Benefits Administration (VBA) has spent $300 million in the past 11 years on information systems modernization, but it still takes more than five months to process a veteran's benefits claim — about the same time it took in 1990.

The U.S. General Accounting Office has identified three main problems at the VBA: lack of an overall business strategy linked to IS, lack of measurable goals for IS and primitive software development practices.

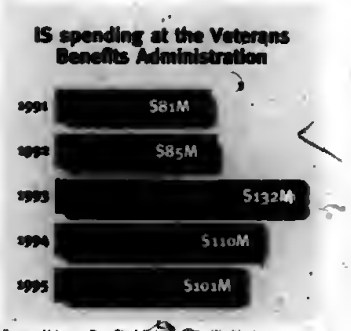
"Unless the VBA takes more aggressive action to effectively address its serious management and technical weaknesses, its modernization efforts will not succeed," said Gene Dodaro, an assistant comptroller general at the GAO. He recently spoke before the House Veterans' Affairs Committee. Dodaro said the VBA needs to take the following steps:

- Create a credible business strategy and supporting IS plan.
- Develop a disciplined investment strategy and methodology for selecting and managing IS projects.
- Strengthen its technical capabilities in software development.

Officials at the VBA, which is part of the U.S. Department of Veterans Affairs, didn't challenge the findings. They said they are moving vigorously to correct deficiencies.

R. John Vogel, undersecretary for benefits, said the VBA is working on a business plan and "performance objectives and indicators" to track systems development progress and determine how it will affect service to veterans.

The VA's lack of progress in speeding service to veterans has come into sharp relief as a result of Vice President Al Gore's "reinventing government" initiative, which was launched three years ago. A key tenet of Gore's National Performance Review was that federal IS expenditures must be based on the promise of tangible, measurable benefits to the public.



Source: Veterans Benefits Administration, Washington

The GAO said the VBA had, for example, bought 24 minicomputers between 1993 and 1995 without a clear plan for how they would be used. Some of the machines sat idle for two years, according to the GAO.

The GAO recommended that the VBA curtail IS development that is "not day-to-day critical" until it has overcome its planning and management weaknesses. And Rep. Terry Everett (R-Ala.) threatened to introduce legislation that would "require [the] VA to submit its [IS] plan to an appropriate body for review before proceeding with new modernization projects."

The GAO was particularly harsh in assessing the VBA's software development practices, calling them "ad hoc and chaotic."

"None of the projects reviewed satisfy any of the criteria required for a repeatable process," GAO officials said.

The VBA drew some support from the Veterans' Claims Adjudication Commission, which was established by Congress to review veterans' claims processing. "We [have] heard a number of things that I characterize as good news regarding strategic management," said Rhoda Davis, a member of the commission.

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IBM, Next Software pay homage to NT

Next ships OpenStep for Windows NT

By Frank Hayes

Next Software, Inc. last month quietly began shipping its long-awaited OpenStep application environment for Windows NT.

The arrival of OpenStep for NT marks the end of a long road for many Next users, who have watched the company slowly peel away the layers that made its products incompatible with de facto standards such as Windows.

Some major Next users never finished the trip. Chrysler Financial Corp., the automaker's financing arm in Southfield, Mich., has shifted sway from Next's software tools to standardize on Windows 95, a Chrysler spokesman said.

Applications

New recruits

But Next's move toward Windows has attracted other users. Merrill Lynch & Co. last September agreed to buy up to $6 million worth of Next software partly based on the promise of OpenStep for Windows NT.

OpenStep is an object-oriented software layer that will let NT users run applications developed for NextStep, Next's proprietary operating system. OpenStep costs $499.

Sun Microsystems, Inc., which codesigned the OpenStep layer with Next, later this year is slated to ship a version that will let NextStep applications run on Sun's Solaris version of Unix.

But it is the NT version that many Next users say they are waiting for.

"We have a heavy installed base of Windows applications, and we need to run our Next applications on the same boxes," said Carol Teasley, vice president of object technology at the Federal National Mortgage Association in Washington.

"We have a big investment in a suite of applications we developed under NextStep, and we're anxious to try OpenStep under NT," said George Kenney, chief information officer at Nicholas Applegate Capital Management in San Diego.

A set of OpenStep development tools for NT will ship in early fall, according to officials at Next in Redwood City, Calif.

Choice is theirs

Longtime users such as the First National Bank of Chicago like being able to choose among platforms for the development system, said Martin Bronstein, senior vice president in charge of capital market systems at the bank. Securities traders at First National use both Windows-based PCs and Sun workstations.

Whether Next can compete as a Windows development tool vendor against Microsoft Corp., Borland International, Inc., Powersoft Corp. and Gupta Corp. remains to be seen — especially since Next's founder, Steven Jobs, has turned his attention toward the Internet.

But a spokeswoman at the company denied that Next has lost interest in OpenStep. "The Internet is a huge Trojan horse for us," she said, noting that Next's Internet tools are built on OpenStep.

"They [Next] are very excited about the Internet," Kenney said. "But we're happy, and we're counting on OpenStep."

Next's road to OpenStep

- February 1993: Abandons workstation hardware
- June 1993: Ships NextStep for PCs
- November 1993: Announces OpenStep with Sun Microsystems
- February 1995: Announces OpenStep for Windows NT
- January 1996: Abandons NextStep; ships WebObjects.
- June 1996: Ships OpenStep for Windows NT and Mac OS
- Q3 1996: Sun to ship OpenStep for Solaris

Other vendors are also building IS links to the Web. See page 46.

Software links AS/400 to NT Workstation

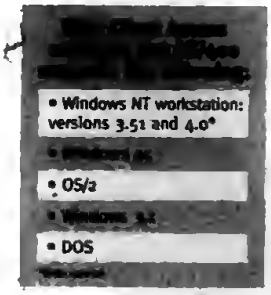
By Michael Goldberg

In another nod to Microsoft Corp.'s desktop supremacy, IBM last week introduced beta software that links Windows NT workstations to AS/400 servers.

IBM's announced embrace of Windows NT on the desktop comes 10 days after the vendor offered Windows 95 client software to AS/400 users. It demonstrates the AS/400 division's change of heart when it comes to supporting anything other than OS/2, users and analysts said.

Tom Bittman, an analyst at Gartner Group, Inc. in Stamford, Conn., said the AS/400 division has demonstrated a commitment to support Windows-based desktops "faster than OS/2. It's a statement that they're doing what's important to the AS/400 [community] and not just what's important to IBM."

IBM officials said it isn't clear when a commercial version of the AS/400-Windows NT workstation software will be available. The Windows NT capabilities will become part of an AS/400 software package called Client Access, which gets installed on PCs. The package now links OS/2, Windows 3.1, Windows 95 and DOS clients to the AS/400.



Feedback channel

Users can download the beta version from the AS/400 division's World Wide Web site and send electronic mail to IBM engineers with feedback on its functionality, said Randy Rudeen, worldwide technical solutions marketing manager for the AS/400 division. The beta version is available at www.as400.ibm.com/client/cahome.htm.

Linking Windows NT workstations to its AS/400 is a must for AKZO Nobel Industrial Fibers, Inc. in Scottsboro, Ala. Roel Tijsmans, a consulting engineer, said his company uses Windows 3.1 clients with an Oracle Corp. database on an AS/400 server but is running out of memory capabilities on the desktop. "With NT, there are no conventional memory problems," Tijsmans said.

IBM's willingness to work with Microsoft to benefit AS/400 shops is an encouraging sign, said Neil Ayrons, who beta-tested the Windows 95 client software earlier this year.

"IBM appears to be extremely open. They won't force me down any one particular avenue. If I want to use Client Access for Windows 95, they'll let me get to that [AS/400] box just like I was using OS/2," said Ayrons, manager of advanced technology at retail chain Linens 'n Things, based in Clifton, N.J.

Want a PowerPC server? Old and new users get in line

By Craig Stedman

Users who have been waiting forlornly for faster PowerPC-based servers can take heart. But they also might have to take a number.

More than a year late, IBM and Groupe Bull are both finally about to ship PowerPC 604 versions of their multiprocessor Unix servers.

That is good news for customers who are aching for the 30% to 40% performance boost promised by the 604 chip over the original PowerPC 601.

But the long delay in getting the 604 to support multiprocessing has created lengthy upgrade queues. Splitting the initial flow of 604s between the customers in those queues and those who are buying new systems is expected to be a tricky balancing act.

"Nobody is going to want to buy a new machine now and get 601s, and then have to wait at the end of the line to get 604s. That would make me pretty angry," said Roy Dodd, MIS director at The Good Guys, Inc., an electronics retail chain in Brisbane, Calif.

But Dodd said he doesn't want to wait any longer to get an upgrade for which he already paid. "I've been waiting over a year, and I just didn't envision it would ever be this long," he said. The company added a second 601-based RS/6000 early this year partly because of the delay, he noted.

Dodd said IBM officials told him the 604 should become available in late July or early August, and upgrades would probably ship in the order that systems were purchased. But IBM hasn't given The Good Guys any firm idea of when it will upgrade the company's machines, Dodd said.

Product backlogs

Balancing act

John Payton, Unix systems product manager at Bull's U.S. unit, acknowledged that balancing the needs of old and new customers poses "some logistics planning" issues for the vendors. Bull will start to ship 604-based versions of its Escala servers this month and hopes to complete the 600 or so upgrades in its backlog by the end of August, he said.

IBM had shipped about 4,700 RS/6000s with upgrades included in the price as of last December, according to International Data Corp. in Framingham, Mass. Working off that backlog could take months, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

In the meantime, IBM has to pit the lure of new business against the loyalty of existing users "with an IOU in their pockets," Partridge said.

IBM declined to comment last week on its plans beyond reiterating promises to ship the 604-based machines this summer.

David Pensak, head of computer science research at Du Pont Co. in Wilmington, Del., is one RS/6000 customer who passed on the 601-based multiprocessors to wait for the 604.

Even the 604 "just puts IBM in the middle of the pack" on Unix server performance, he said. But the reliability of the RS/6000 helps make up for its less-than-stellar throughput, he said.

Bull, Microsoft and others are ready to cluster. See page 39.

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Another dimension

Multidimensional database eases analysis of insurance claims

By Thomas Hoffman
MELVILLE, N.Y.

In the past, when customers wanted data from insurance broker Sedgwick James, Inc. they had to dial in to the broker's database, download the data, get technical help to convert it to a spreadsheet and print out huge paper reports.

Elapsed time: two days.

Next month, the New York-based brokerage will deploy an online, multidimensional database with a graphical user interface so customers can get the same data in a matter of seconds — without technical help.

Sedgwick's Alan R. Josefsek *(left), shown here with IS consultant Eric D. Wild, says: 'The average Joe can't handle the complexity of ad hoc queries — we simplified that for them'*

Officials at the brokerage said they hope the system will attract customers who want to assess their insurance costs on the fly.

Alan R. Josefsek, managing director of the Sedgwick Information Systems group, based here, said the system could help the broker increase its risk management service revenue from $2 million this year to $10 million in 1998.

That would be a pretty good return on the $250,000 that Sedgwick James has invested in manpower and software to build its risk management information system over the past two years.

Loss specialists need to analyze mounds of demographic data to figure out things such as the ideal deductible on health insurance for workers' compensation claims.

Easy access

To make the risk management data more accessible to customers, Sedgwick James last year installed a client/server system that uses Information Builders, Inc.'s (IBI) Focus relational database management system, its Focus/EIS for Windows client software and its EDA/SQL tools to link with an IBM RS/6000-based data warehouse.

The system has made it easy for, say, a claims adjuster to analyze workers' compensation claims by cause of injury, body part affected and number of employees who have suffered similar injuries.

But RDBMSs such as Focus aren't geared for decision support. "Think of a relational system as a blueprint, and a multidimensional system as a three-dimensional model of a house," said Richard Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. "It's harder to read a blueprint than it is to figure out a 3-D model."

That is what led Sedgwick James to IBI's Fusion system. Unlike two-dimensional spreadsheets, the Fusion multidimensional database partitions data into dimensions such as time or region for easier analysis.

Since Sedgwick James began testing the Fusion system in April of this year, average query response rates have been three to five times faster than they were for its RDBMS. For complex queries, response rates have improved ninefold.

DEA solves case of poor data management

By April Jacobs

The federal Drug Enforcement Administration (DEA) is using a new document management system to improve the way it handles internal investigations.

Steven W. Casteel, deputy chief inspector at the DEA's Office of Inspections, said the department needed document management because the older, manual process took too long and was labor-intensive.

Automated systems

It used to take the Office of Inspections four months to complete an internal investigation of possible wrongdoing. That's because agents would file reports that would later be typed by secretaries in the field, and the revision process was lengthy.

"Under the new system, I can do that all electronically, and you can compile from multiple sources electronically," Casteel said. The investigations now take a few weeks, he said.

A study of the project by International Data Corp. (IDC) in Framingham, Mass., shows annual savings of $682,500. The $700,000 start-up cost was nearly covered in the first 12 months of operation.

The DEA began to install document management in December 1994 and was online last June. The organization gave agents laptops and set up a remote access network that would let them file reports from the field.

The agency installed the system in response to increased public scrutiny of law enforcement agencies and demand for routine inspections of the DEA's offices.

Under the new system, routine investigations of each office are performed annually, rather than every four years.

The system also helps the DEA be more responsive to inquiries from other agencies, congressional oversight committees and the attorney general's office. Casteel said his staff can search for pertinent names or subjects online, which gives them instant access to information.

Scott McCready, a principal analyst at IDC, said the DEA's system is an example of how organizations can see quick returns on their investment with document management.

"It impacts people not just at the professional level or the administrative level but up to the most senior level of management," McCready said.

Merger kills Cisco's Lightstream switch

By Bob Wallace

Cisco Systems, Inc.'s much-ballyhooed Lightstream 2080 switch has become the first casualty in a clash of product lines caused by the company's $4 billion merger with StrataCom, Inc., sources said.

Last year, Cisco spent more than $100 million to buy Lightstream Corp. and its Asynchronous Transfer Mode (ATM) switches. But a few months ago, Cisco announced plans to merge with StrataCom, which markets both ATM and non-ATM switches.

Enterprise nets

Sources said Cisco has decided to pull the plug on the Lightstream switch. And analysts predict that Cisco will instead push the StrataCom BPX ATM switch — already used in private user and carrier networks — after the merger is approved, which could be as soon as two weeks.

Cisco officials declined to comment on Lightstream 2080 but did say the company's view of the ATM market has changed.

"The [pending] acquisition of StrataCom has shifted our ATM product plans," said a Cisco spokesman, who added that Cisco will delineate its ATM strategy in three to six months at the latest. The spokesman wouldn't say what other Lightstream products, if any, would be phased out.

That makes the future uncertain for customers of both companies because the merger will leave Cisco with two overlapping switch lines.

"Users should start pushing Cisco to the fullest extent for an effective and orderly migration strategy that should be in place by the end of the third quarter," said John Moreacy, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass. "And they shouldn't stop pushing until they're comfortable with what they hear."

Customer opinion

Users have their own advice for Cisco.

"They should provide users an attractive upgrade package wherever possible because that would win them a great deal of customer loyalty," said John Boyd, chief technologist at Northeast Utilities, Inc. in Berlin, Conn., a longtime StrataCom customer that also uses Cisco products.

Back to the drawing board

Even strong products such as Lightstream 2080 can't always survive mergers and acquisitions

PLANNED LIGHTSTREAM 2080 FEATURES

Type: ATM switch

Purpose: To anchor users' LAN/WAN backbone networks

Horsepower: Several times higher switching capacity than its predecessor, which had 26 bit/sec.

Number of slots: 16, for processing and media interface cards

Other: Support for various types of ATM WAN services

The future is uncertain for large users who have Cisco's Lightstream 2020 switch and may be running out of horsepower. Cisco officials said the 2020 is fairly broadly deployed but wouldn't divulge shipment figures.

Tom Downey, director of product marketing for the ATM unit at Cisco, said those users can buy a smaller Lightstream switch, with a base price of $18,000, to serve as a front end to the older Lightstream 2020.

DEC derailed

CONTINUED FROM PAGE 1

"Digital, in my mind, has created such confusion in its market base [it is to the point] where almost every customer we talk to wants to buy from someone else," said a Digital reseller in Minneapolis, who requested anonymity.

Tim Trickett, information resources manager at 3M in St. Paul, Minn., said Digital's problems weren't really a surprise.

"We've been concerned about them for some time," Trickett said. "It's hard just finding the right person to talk to when there is a problem or even if we want to buy something."

New road?

Digital is expected to scale back widely on its commercial PC business and could focus mainly on supplying its own customer base in the future.

Because of the difficulties, Trickett said that when it comes time for his company to buy new hardware, "It is unlikely to be DEC."

Fall guy

Digital's announcement last week came on the heels of the resignation of Enrico Pesatori, its No. 2 executive. Pesatori is credited with much of Digital's PC turnaround last year and may have become the fall guy for its latest problems, analysts said.

This is the second straight quarter that Digital's profits have come in at lower-than-anticipated levels, which would suggest that its turnaround attempts may be losing steam, analysts said.

The company reported a string of successful quarters last year and closed the year with a profit of $122 million.

"They are heading in the right direction ... but they have more structural problems to fix," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Analysts said these are some of the issues that Digital still needs to address:

- Better communication and execution of its channel policies.

Some of Digital's channel partners are dissatisfied with what they claim are inconsistent qualifying requirements, insufficient sales leads from Digital and a lack of information about the company's products and strategies.

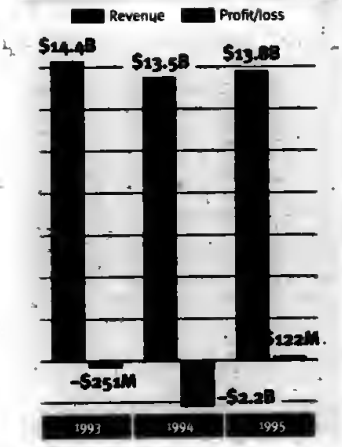
Despite having a good channel strategy, "It is paramount that Digital needs to do something about getting information about its [account] coverage and fulfillment policies" out to its customer base, said Joseph Pollizzi, who is president of the U.S. chapter of the Digital Equipment Computer User Society.

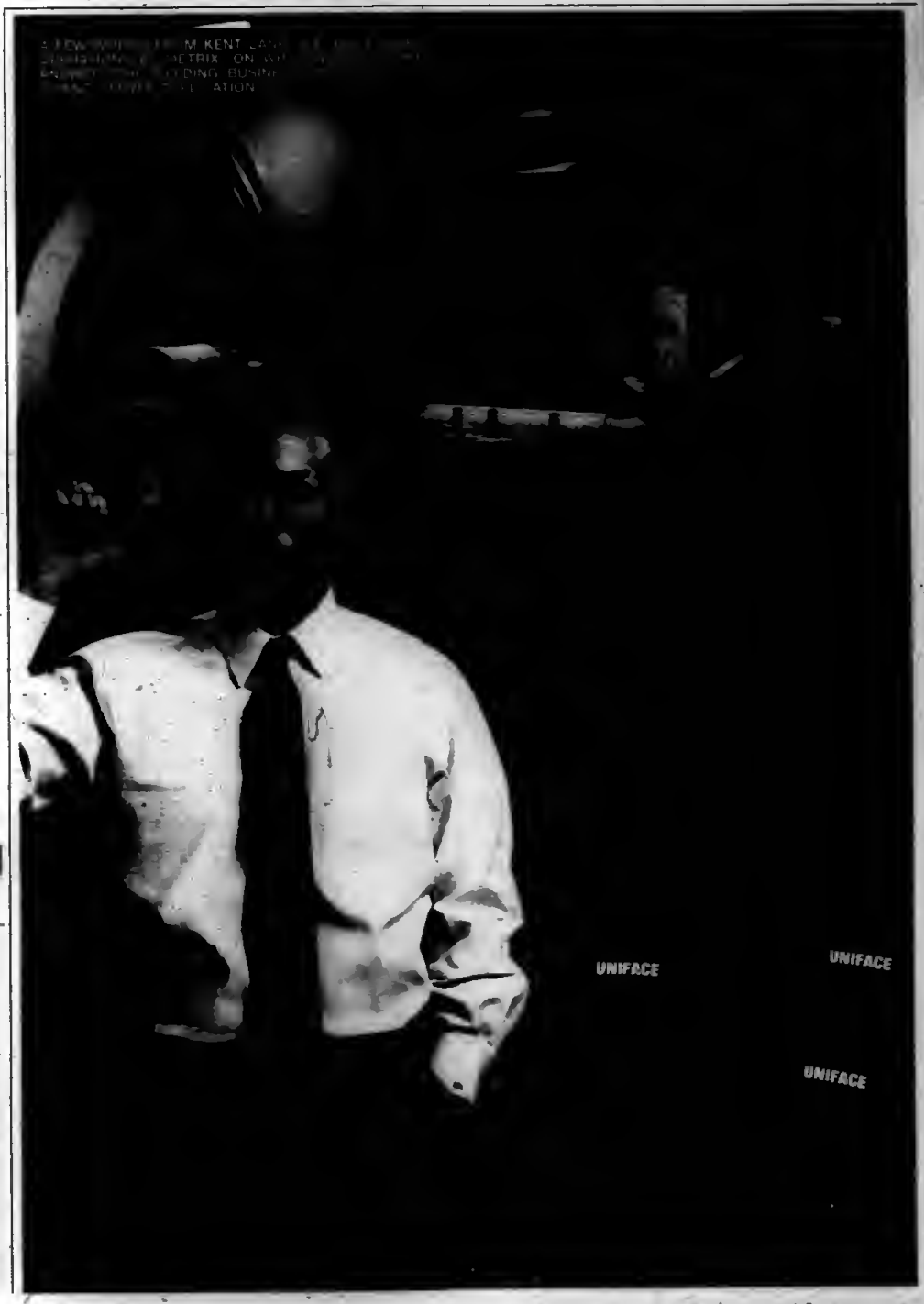
"Customers won't buy a product if they don't know anything about it," he said.

- In the short term, getting rid of a bloated PC inventory estimated at more than $500 million from the channel. In the long term, figuring out what to do with the loss-making PC business.
- Keeping its vast installed base of OpenVMS customers happy. Digital's increasing emphasis on Windows NT and Unix is leaving some VMS users — particularly in the scientific and engineering communities — frustrated and unsure about the firm's long-term commitment to the operating system.

"They are not putting their resources into VMS at all," James said. "Let's have some ... appearance of VMS support at least for a change."

Digital's financials





Members of the client/server transition team for Palm Beach County included (front row, from left) IS director Victor Ferreros, Irene Manning, deputy IS director Stuart Galup, Linda Gannon and Ken Ianni; (back row, from left) Archie Satchell, Robert Cerveny of Florida Atlantic University, tax collector John K. Clark and Charles Tharp.

Mainframers win ticket to client/server ride

CONTINUED FROM PAGE 1

unusual project is an innovative on-the-job retraining program that involves simultaneously rolling out systems and teaching mainframe staff the client/server skills necessary to build those systems.

"There are 48 systems, and if we want to make a millennium change, we have to be building software now," explained Victor Ferreros, information systems director for the county. "This way, we don't alienate anybody, but we get productivity now."

Avoiding 2000

Palm Beach County officials estimated it would have cost from $3 million to $5 million to make year 2000 corrections to 48 key mainframe-based systems.

Since last year, about a third of the county's application developers have been trained in Open Environment Corp.'s communications middleware technology and Powersoft Corp.'s PowerBuilder programming language. They work on teams with mainframe programmers, who will also be retrained but, for now, continue to develop applications in Cobol.

The county last year budgeted $14.6 million toward the $34 million multiyear project. Of that amount, $600,000 was devoted to training. The total training budget this year is $200,000.

For Linda Gannon, a 15-year mainframe programming veteran and project leader on a new occupational licensing system, the move to client/server and the complementary training program were "a great opportunity not to be considered a dinosaur."

Familiar skills

Gannon said the re-engineering capitalized on many of the skills she had learned in the mainframe world.

"As scared as people are about jumping into this arena, it's not like when you first go into programming, and you're just learning the business," she said. "It's not as big of a learning curve as you think. I don't think it's an unreasonable challenge for any mainframe programmer."

The county's client/server systems incorporate mainframe Cobol code that is retooled to run on Unix-based application servers. Other components include PC-based access screens written in PowerBuilder and an Oracle Corp. database management system on the back end. Two three-tier systems have been built this way, so far.

One of those is the occupational licensing system in the tax collector's office. The office collects about $1.5 billion annually on behalf of 100 different agencies, whose records are stored separately on the mainframe.

"The idea is to have one entry point into all of these systems and the ability to cross-reference the systems," said John K. Clark, tax collector for Palm Beach County. "For example, we could look at the tourist tax system to make sure somebody paying the tourist tax also has an occupational license."

Meanwhile, a second new property appraisal system has already paid for itself. The system gives real estate agents dial-up access to information about property throughout the county.

No more pigeonholes

The government of Palm Beach County's move to client/server has triggered major changes in its IS career landscape.

More than 30 titles and job classifications have been eliminated.

Former programmers, minicomputer programmer analysts and microcomputer analysts have all been reclassified as software engineers.

"We didn't want to pigeonhole individuals as we move," IS director Victor Ferreros said. "We are looking for job rotation. We may want someone who did microcomputing work to now work on a graphical user interface on the front end."

Since last year, the county — working in conjunction with Florida Atlantic University — has trained a third of its 150-person mainframe-based IS staff in client/server technologies.

"It's a massive undertaking, but the county has taken the position that these are good mainframe people who are just in the wrong technology sector through no fault of their own," said Robert Cerveny, chairman of the university's decision and IS department.

The added bonus: "The training is also keeping morale up and making people feel valued because the county is investing in them," he said.

—Julia King

Microsoft draws bead on IS

CONTINUED FROM PAGE 1

concerns about complexity by making Visual C++ easier to use, said Joe Quagliani, group product manager at Microsoft's Visual C++ division. But he declined to reveal the full list of features to be incorporated in the version due this month or in the following version.

He said Microsoft will add more wizards, which are built-in, automatic code-generators for common tasks.

He also said a Visual C++ training CD-ROM will come with the version to be shipped later this year or early next year.

Low market share

These moves stem from the fact that only about 20% to 25% of all corporate developers in Microsoft's developer base use Visual C++. Microsoft's share is less than 5% of the corporate development market, Quagliani said.

Of an estimated 7 million corporate developers worldwide, about 5 million use Cobol.

On top of those odds, Microsoft's Visual C++ is fighting off market advances from Powersoft Corp.'s PowerBuilder, Borland International, Inc.'s C++ and even sibling Visual Basic.

Yet the corporate developer market is a siren song for Microsoft. With a price of about $500, the professional edition of Visual C++ would be very lucrative if it could pick up some of Cobol's 5 million users.

"Oh, sure, we're definitely interested," said Terry Hale, information systems director at the Pierce County Information Services Department in Tacoma, Wash., which primarily uses PowerBuilder. "We're always looking for better types of tools for development purposes."

David Marcillo, application development manager at Harvard University in Cambridge, Mass., started to Visual C++ about two years ago, after using Visual Basic and PowerBuilder. "It is harder to learn C and C++, but once you get over that hump and get some programmers teaching others, [you] are much more productive," Marcillo said.

Microsoft's push to persuade corporate developers to use Visual C++

- Worldwide seminar tour touting product to corporate developers is scheduled for the beginning of 1997
- Version update of Visual C++ will ship this month
- New C++ product will be launched this month

Chris Kwiecinski, senior systems developer at Nabisco, Inc. in Parsippany, N.J., oversees 250 developers who use a combination of PowerBuilder, Visual Basic and Powersoft's Optima++.

He said Microsoft would have to make Visual C++ easier to use before he would bring it into his shop.

"Products like Visual Basic and PowerBuilder protect you from all of the C++ lower-level stuff: memory allocation, creating pointers, calling Windows [application programming interface] functions. C++ is pretty time-consuming," Kwiecinski said. "And do you need all that C++ power? PowerBuilder and [Visual Basic] can show reports, collect data and show data. A lot of corporations ... just don't need that overhead."

C++ is indeed "a big leap in complexity," said Dave Kelly, director of application strategies services at Hurwitz Group, Inc. in Newton, Mass.

Kelly said if Microsoft wants a shot at a bigger chunk of the corporate market, then it has to make Visual C++ easier to use.

"Because of its reputation as being potentially difficult, there are a number of corporations that won't consider it or haven't tried it," he said.

A large segment of corporate developers won't switch over to Visual C++ simply because it doesn't fit their needs, Kelly said.

"It's meant for corporate developers who need to create high-performance, platform-specific applications that don't require a high degree of modification," he said.

"Microsoft may be able to expand the market by doing this." But he added that a lot rides on the exact features Microsoft includes.

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COMPAQ

Has It Changed Your Life Yet?

Who's online? Accountant 1.0 tracks ISDN usage

Software can help reduce connection costs

By Kim Girard

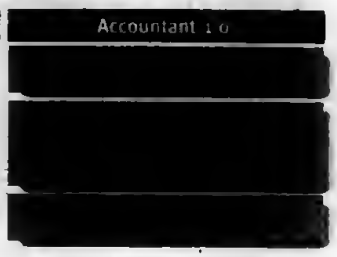
ISDN users may soon get a new tool to help prevent the shock of an unusually costly telephone bill.

Kansmen Corp. in Milpitas, Calif., recently unveiled Accountant 1.0, a Windows-based application that reports and analyzes Integrated Services Digital Network (ISDN) usage.

Dan Kordick, network operations director at Signet Partners, Inc., an Internet service provider in Austin, Texas, plans to resell the $300 Accountant 1.0 to any of his 200 customers who are concerned about ISDN usage.

"A common question [we get] is, 'Who's using our ISDN router and how much are they using it?'" he said. "Now they can find out for themselves."

Currently, Kordick gathers that information only on request, with a utility on his workstation that monitors and displays the flow of Internet Protocol packets.



Internet service providers typically send ISDN customers a bill that includes only the total monthly charge for connections. Bills exclude details such as the date, time and duration of connections — precisely the data that users can track with Accountant 1.0, the vendor said.

Accountant 1.0 runs on the customer's network and monitors the ISDN router. It tracks the user and duration of an Internet connection. Historical usage information is stored on a database that can generate reports or a cost analysis to determine if a change in router parameters would reduce connection costs.

Test run

Internet service provider Network Intensive, a division of Compute Intensive, Inc. in Irvine, Calif., is evaluating Accountant 1.0. The company may bundle it with an ISDN installation package or resell it.

"It really fits into what we're striving for — which is a complete quality Internet solution," said Michelle Bilder, marketing director at Network Intensive. "We're rigorously testing it. So far, the engineers have glowing reports."

Bilder said Windows and Macintosh users who use ISDN can't track calls. "We've had a lot of users say: 'How do I track my usage?' 'How do I know if my line drops?'" Bilder said. "Unless they have a Unix box, they don't know."

Kordick said he doesn't know of another product that will let administrators monitor ISDN usage by server or workstation.

Bob Scott, owner of Rampant, Inc., an Internet service provider in Independence, Ohio, uses the beta version of Accountant 1.0 to track his dedicated connection to customer sites. The service informs Scott when customers lose a connection, so he can quickly switch to a backup server.

"Our clients are the 24-hour connection crowd," he said of his coterie of small-business clients. "We're using the Accountant to track how successful they are at keeping their site going."

Scott said the service lets him track ISDN the same way he tracks a T1 line. "When our router goes down, the T1 provider calls us. This gives us a similar ability," he said.

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IBM refuses to 'roll over and die' in OS/2 battle

By Laura DiDio

You might think that with all the talk about Microsoft Corp.'s Windows NT momentum, IBM would be ready to toss in the towel on its OS/2 Warp platforms. Think again.

John W. Thompson, general manager of IBM's Personal Software Products Division, said all the hype and market research reports that predict OS/2 Warp and OS/2 Warp Server will be consigned to niche market status have strengthened, not altered, IBM's commitment to the platforms.

"We're not going to roll over and die because people don't think we can win against Microsoft on the desktop or Novell and Microsoft on the server," Thompson said. "OS/2 Warp and Warp Server are the linchpins of our Intel-based client/server offerings. We'll generate our own success."

Part of IBM's strategy is to embed as much leading-edge functionality as possible into the core OS/2 Warp operating system and OS/2 Warp Server network operating system.

For example, the next version of OS/2 Warp, code-named Merlin, will include integrated voice and speech-recognition capabilities, an internal World Wide Web browser and object-oriented technology for easy Internet access. It will also have a universal client that connects to any network operating system, including Windows NT Server.

IBM's John W. Thompson says OS/2 Warp will succeed

Similarly, IBM has bolstered the fault tolerance, multitasking, integrated Java support and symmetrical multiprocessing (SMP) in OS/2 Warp Server.

IBM's installed base, particularly in the financial and accounting industries, has remained loyal largely because of the technological excellence of the platform, according to International Data Corp. (IDC), a research firm in Framingham, Mass.

High user satisfaction

An IDC survey released three months ago of 100 IBM OS/2 Warp and Warp Server users indicated that "97% were satisfied with OS/2 Warp, and 71% said they were very satisfied," said analyst Lee Doyle.

Ray Pratts, senior technical analyst at Variable Annuity Life Insurance Co. in Houston, said although the OS/2 Warp products "are phenomenal," he fears that IBM's marketing won't be able to keep pace and that Variable could be left "high and dry with a niche market operating system."

Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass., said OS/2 has technological advantages, "but none of this will help OS/2 Warp Server and OS/2 Warp overcome their market share deficit. It's a legacy product family."

Thompson unequivocally rejected that notion. "If they were legacy products that IBM was going to abandon, I wouldn't introduce a new server, client [and] directory or SMP-enable the product or introduce voice and speech capabilities," he said.

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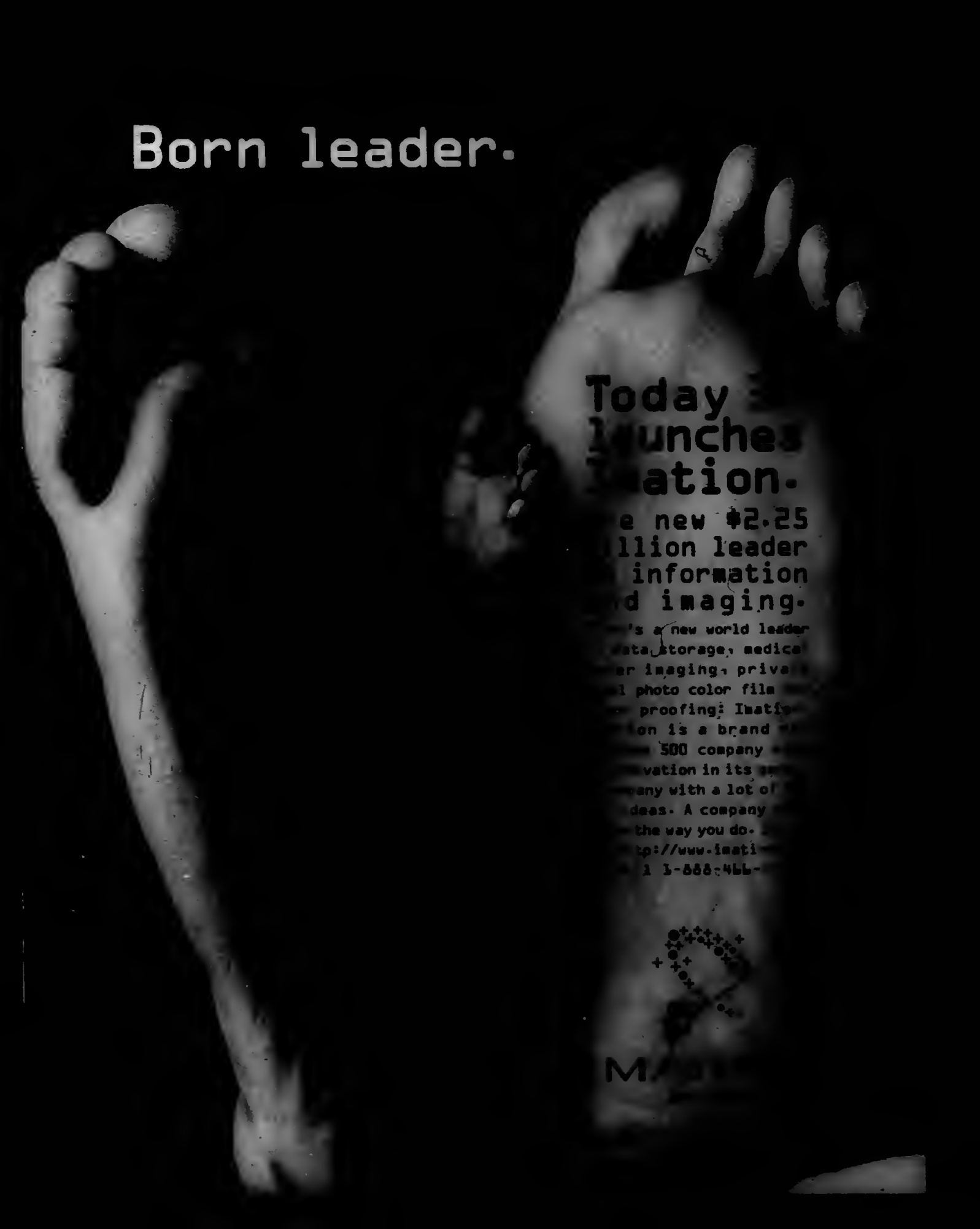
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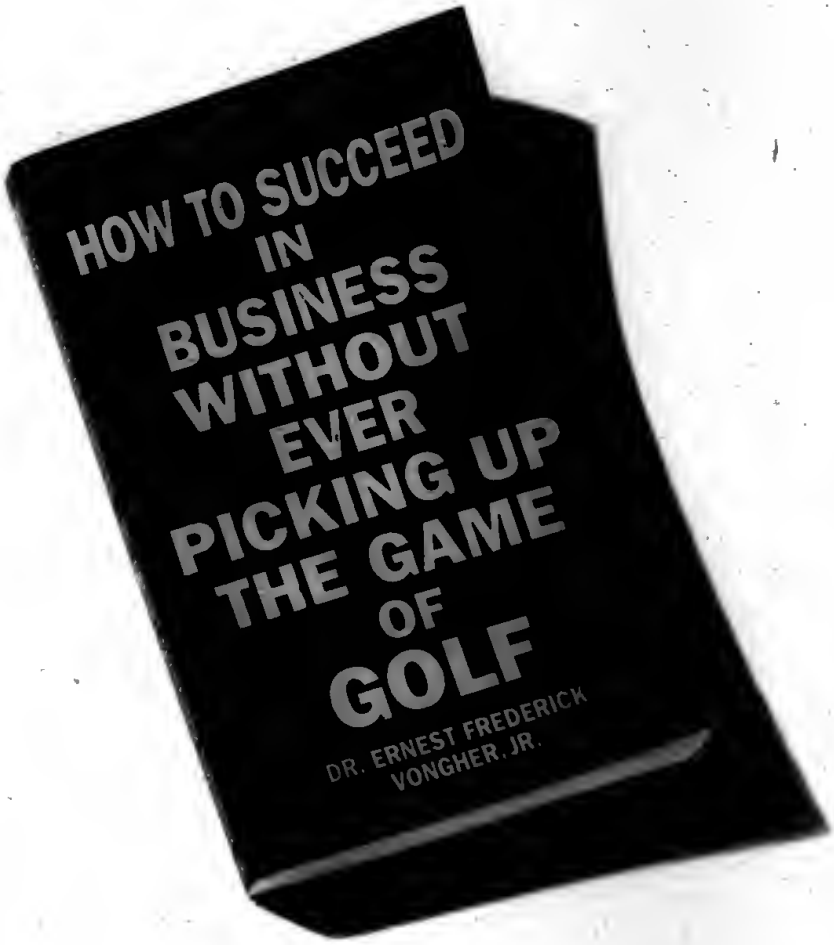

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So you want to go online?

By Mitch Wagner

You probably haven't heard of Evergreen Internet, Inc.

But you've certainly heard of its clients. Spiegel, Inc., Robert Redford's Sundance Catalog and Sharper Image Corp. are among the companies that signed on with Evergreen Internet to have it put up their World Wide Web sites.

These users said they were drawn to Evergreen Internet by the company's expertise in direct marketing online and its previous track record for putting direct-marketing sites on the 'net.

The experiences of Evergreen and its clients can prove useful to information systems managers wondering how to go about getting online and how to pick a consultant who can get them there.

Been there, done that

For starters, IS managers seeking help with online commerce are directed to look for consultancies willing to experiment, have a track record and offer broad knowledge not just of the Internet, but all business computing areas. Here are some tips:

- **Look for companies that have done it before.**

"You look for companies with success in like industries," said Joshua Tretakoff, manager of alternative media at Sharper Image in San Francisco. "Just because somebody put a plumbing supply business online didn't mean they knew my business — retail."

- **Find companies that have a broad range of computer skills.**

Customers and business partners will need in-depth, up-to-the-minute information about your company's products and services. To do that effectively, the Web site will need to link to back-office systems. That means the Web site designer will need expertise in database systems, networking, hardware, software and business processes, as well as the creative acumen to make a site visually attractive.

- **Seek out partners willing to experiment.**

Look for a company that isn't just going to build your site and walk away but is willing to stick around and help the site grow and evolve. The Web is a changing and growing medium, and sites that don't change become boring and unattractive.

- **Search for a company that is willing to teach your IS staff Internet skills.**

To effectively coordinate the Web site with the company's internal IS infrastructure, the people who maintain that infrastructure need to understand the Internet.

- **Go after a company that can help you publicize your Internet effort.**

There are hundreds of thousands of sites on the Web, and without some old-fashioned publicity and advertising, one more won't get noticed. Evergreen Internet sent out a flurry of news releases when Air Handling Systems went online, and it made sure the site was listed on all the major search engines. That helped build up traffic early on, said Jamison Scott, manager of marketing and administration at Air Handling Systems.

Joshua Tretakoff, Sharper Image's *manager of alternative media, recommends picking an Internet consultancy that has dealt with other firms in your industry. It should also be willing to teach your IS staff Internet skills.*

Corbis Corbis

NCR, free from AT&T, returns to its roots

Will focus on NT, data warehousing and midrange servers to lead its charge

By Jaikumar Vijayan

It's back to the future for NCR Corp.

Nine months after AT&T Corp. decided to spin off the company, which it had spent $7.4 billion to acquire in 1991, NCR is returning to its core competencies to help put it back on track.

The key to NCR's comeback is a renewed marketing and development emphasis on its traditional strengths — midrange Unix servers, large multiprocessor systems and data warehousing applied to the financial, retail and communications industries.

At the same time, NCR has tried to stem its losses by pulling out of the PC business, cutting 7,400 jobs and implementing sweeping internal management changes, CEO Lars Nyberg said in a recent interview.

Industry analysts applauded NCR's attempts but cautioned that it is still far too early to pass a long-term verdict.

"They have always done a good job within their core market areas. That has been one of their key strengths," said Tom Kucharvy, president of Summit Strategies in Boston.

"They have made the right moves so far, but what is going to be vital is the execution," said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

NCR's biggest challenges are the following:

- The erosion of market share and mind share in key areas such as the Windows NT server market, where NCR has fallen from a leadership position.
- The continued perception of NCR as a vendor of large, proprietary boxes, especially in the fast-growing data warehousing arena.

Close watch

Nyberg, a former executive at Phillips Electronics N.V., took charge of the company last June, when it was estimated to be losing more than $1 million per day. He instituted greater accountability within each business unit, stringent expense-level reductions and improvements to sales and marketing processes, he said.

"We were far too widely spread. ... We were sitting on a cost structure that was far too expensive," Nyberg said.

So far, some of NCR's efforts may be paying off modestly, analysts said. In the first quarter, the company reported a smaller-than-anticipated loss of $37 million on revenue of $1.6 billion, compared with a loss of $172 million in the same period last year.

NCR's cost-cutting efforts have trimmed operating expenses by $150 million. On the systems front, the company's focus on key markets has helped it rake in more than $400 million in less than nine months on sales of its highly scalable WorldMark servers.

More to come

For the rest of the year, users can expect to see new products in the Windows NT and data warehousing areas. NCR is getting ready to announce more NT clustering capabilities and shrink-wrapped data warehousing packages aimed at small and medium-size corporations.

NCR's goal is to hit the break-even point before the end of the year, when it becomes a publicly traded independent entity again. Under terms of the spin-off, AT&T shareholders will receive NCR stock.

Nyberg's plan for putting NCR's house in order:

The chore	How to get it done
Focus	Concentrate on core businesses such as communications, financial, retail, data warehousing and midrange servers.
Cut expenses	Reduce head count, get out of unprofitable PC and low-end markets.
Improve processes	Redeploy employees from manufacturing and other departments to revenue-generating sales and marketing.

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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Reseller
95. Other _____

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/Assistant VP IS/MIS/DP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D Tech. Mgmt.
50. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
99. Other Titles/ Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NetWare

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries?
(Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

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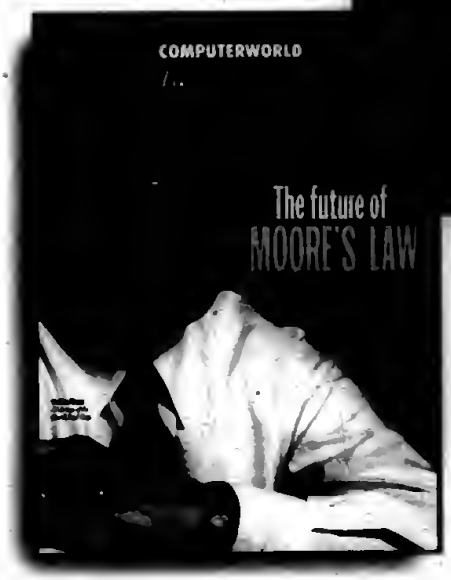
A Special Monthly Editorial Feature in Computerworld That Helps Put You on the Road to Strategic Success



In next week's issue of Computerworld:

The Future of Moore's Law

Can Moore's Law continue indefinitely? Probably not, says Intel Chairman and Co-founder Gordon Moore. Technical and business limitations will soon present real problems to the "law" that states chip capacity doubles every 18 to 24 months. Falling off the curve has implications for everyone in the silicon food chain, including IS managers who count on rapid systems upgrades to drive business.

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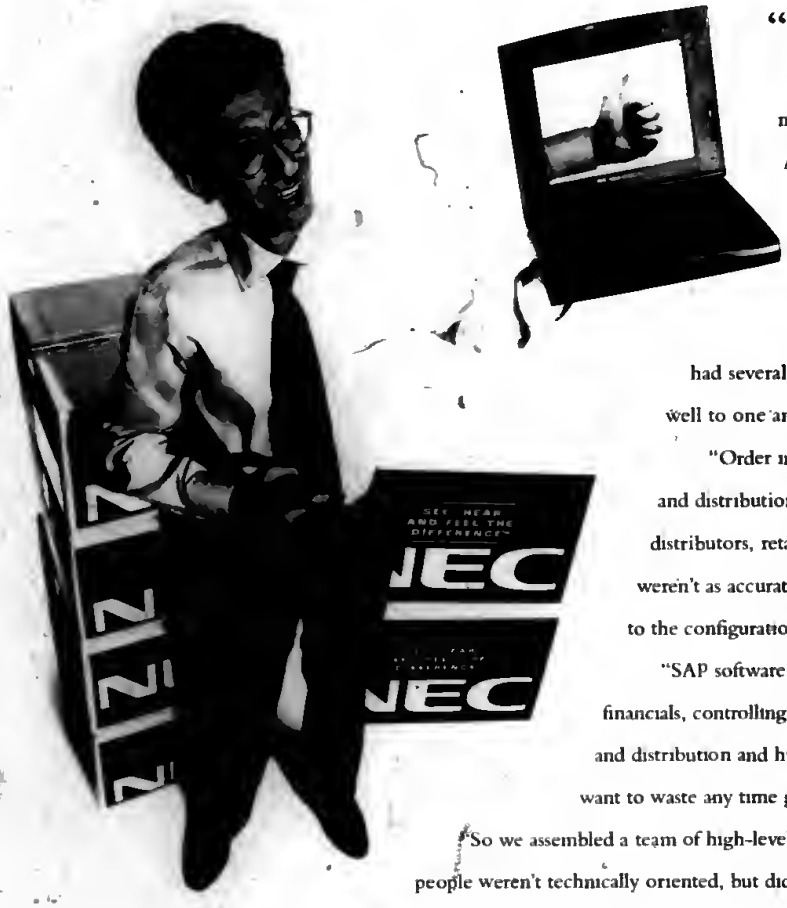
COMPUTERWORLD

Everything you need to know.

"What those guys did was great."

—Akira Isahai,
Project Manager,
NEC Technologies



"But our situation was entirely different.

"We always have to contend with a PC marketplace that changes at a very rapid pace. And as NEC Technologies has grown into a $2.4 billion company, we developed some natural complications that were slowing us down a little. Our legacy systems weren't flexible eoough to support the speed of change. And we had several piecemeal systems that didn't talk very well to one another.

"Order information took too long to get to manufacturing and distribution, creating problems for our supply chain of distributors, retailers and corporate end-users. Our delivery dates weren't as accurate as we wanted. And it was difficult to react quickly to the configuration preferences indicated by the marketplace.

"SAP software was the answer. Specifically, the modules for financials, controlling, materials management, production planning, sales and distribution and human resources. And needless to say, we didn't want to waste any time getting them installed.

"So we assembled a team of high-level users at NEC to work with our consultants. Our people weren't technically oriented, but did have a deep understanding of our business. We knew they could make good business decisions about our processes and then apply them to configuring the SAP software.

"Thanks in no small part to our rather novel approach, we had 1,400 users up and running in only eight months.

"Now, accurate, real-time information moves freely to everyone who needs it, throughout the entire organization. Even to our parent company's headquarters in Japan.

"Our whole manufacturing process has become much more flexible. We can offer dramatically compressed delivery times. And we've been able to integrate suppliers into our order, manufacturing and distribution processes.

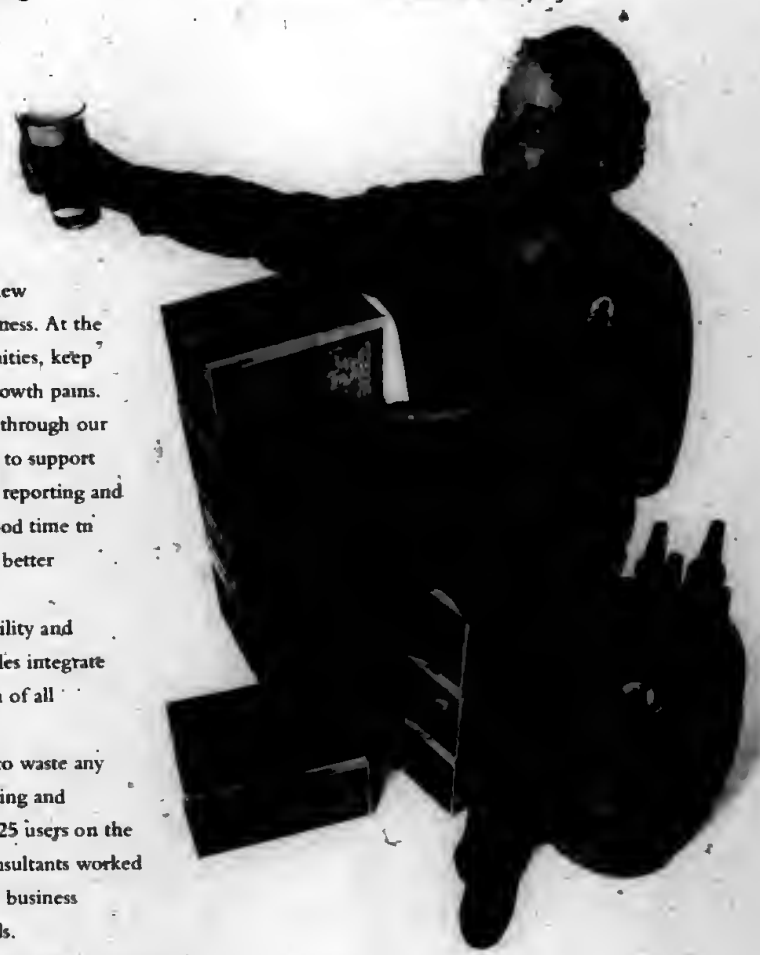
"And the best part of the whole story is, we did it our way."

To find out how SAP software can help your company work the way you've always wanted it to work, call 1-800-283-1SAP. Or visit us at http://www.sap.com.

SAP
Business Process Software

"What those guys did was great."

—Martin Roper,
VP Manufacturing and Business Development,
The Boston Beer Company



"But our situation was entirely different.

"We're a fast-growing $150 million company known for distinctive, award-winning beers like our Samuel Adams. To keep up with increasing demand last year, we added two new brewing locations and three new beer styles.

"Our growth meant we had to rapidly master new levels of complexity in almost every area of our business. At the same time, we had to react quickly to new opportunities, keep close control of costs and deal with the inevitable growth pains.

"As if that weren't enough, we were also going through our initial public stock offering. We needed new systems to support both our business growth and the increased financial reporting and control requirements of being public. It was not a good time to disrupt our existing business systems, but we needed better management information fast.

"SAP software was the answer. It has the flexibility and functionality we wanted. And the application modules integrate seamlessly, so we could plan a quick implementation of all modules with a minimum of business disruption.

"Once we made our decision, we didn't want to waste any time. Our two-person IS department began purchasing and configuring totally new hardware, and training our 25 users on the new equipment. A small, but invaluable team of consultants worked with a half-dozen key employees to map the critical business processes and configure the applications to our needs.

"We were able to test options while still conducting business as usual. Whenever a configuration decision between two valid options was required, our key employees made the decisions in less than 24 hours, and the configuration continued.

"Thanks in no small part to our rather novel approach, we had the entire SAP software suite up and running in only four months.

"We didn't disrupt our operations in the process, either. Which was a good thing, since during the implementation period we had our busiest quarter ever and also completed our IPO.

"Now, we get more information and get it faster than ever before. Everybody who needs to know can see exactly what's going on. We're also managing our entire supply chain better, from purchasing all the way to delivery.

"And the best part of the whole story is, we did it our way."

To find out how SAP software can help your company work the way you've always wanted it to work, call 1-800-283-1SAP.
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SAP
Business Process Software

Computer Industry

"The lowest priority in our cutbacks is customer support. People's individual relationships with Sybase are unlikely to change."

chell zman

By Dan Richman

In the wake of Sybase's largest quarterly loss ever, Computerworld *spoke with Mitchell E. Kertzman, executive vice president of sales and marketing.*

Q What caused Sybase's $20 million loss?

A We had operating expenses that exceeded revenue by about $20 million. And we had a lot of sales that fell through. We need to have many more sales on the books. And we want to cut expenses to the point where we could have been profitable on the revenue we had this quarter.

Q How will you cut expenses?

A We will eliminate between 600 and 700 jobs worldwide — about 10% of the workforce — within the next two weeks. The cuts won't be concentrated in any one product area or region. We'll also cut products and programs that are incidental to our mission: supplying databases, development tools and middleware. I won't give any details now on what those cuts will be, but watch our home page [www.sybase.com] over the next two weeks. We will focus more on vertical industries, and we will emphasize the Internet.

Q Can you give any details at all on what products might be involved?

A No. But SQL Server, PowerBuilder, OmniConnect, IQ — the big ones — definitely won't be affected.

Q Was the loss a surprise?

A Yes. We were expecting break-even to modest profits. We need to improve the reliability of our sales forecasting and to lower the bar to profitability with those expense cuts.

Q Some users we've talked to are taking this news very calmly. They seem to be keeping their faith in Sybase.

A But we don't want to take advantage of that. The lowest priority in our cutbacks is customer support. People's individual relationships with Sybase are unlikely to change.

Q You've said Sybase is focusing more on "business buyers" now as opposed to information technology buyers. What do you mean?

A The IT buyer was our primary focus in the past, but more and more business people are becoming heavier influencers on the IT climate. And these folks look at Sybase and worry about things like our stock price. We need to communicate a higher-level message about Sybase and less about technical details on products.

Q Are there any encouraging signs at all in the quarter's performance?

A Yes. Revenue was slightly higher than first quarter, including server licensing revenue. But we're not growing as quickly as expected.

Sybase regroups in face of $20M loss

By Dan Richman

Users and analysts were calm in the face of Sybase, Inc.'s startling news last week of a $20 million quarterly loss — its biggest financial setback to date. But the Emeryville, Calif., vendor clearly is taking the unexpected downturn as a dramatic call to action.

Sybase officials said within the next two weeks, they will cut up to 10% of the company's worldwide workforce — 600 to 700 jobs — and eliminate extraneous products and programs. At risk is anything outside of its core competencies in database, development tool and middleware software.

"We will focus more on vertical industries, and we will emphasize the Internet," said Mitchell E. Kertzman, Sybase's executive vice president of sales and marketing (see Q&A at left). "SQL Server, PowerBuilder, OmniConnect, IQ — the big ones — definitely won't be affected."

"This doesn't change our long-term commitment to Sybase," said Tom Bierzychudek, director of business systems at Chicago-area lender Household Financial Corp. "We are confident Sybase will get us where we want to go," Bierzychudek said.

"We anticipate major performance increases from running some packaged apps, like Dun & Bradstreet Software's SmartStream financial application, on SQL Server 11," said Tom Hind, manager of technical services at Spartan Mills, Inc., a textile firm in Spartanburg, S.C.

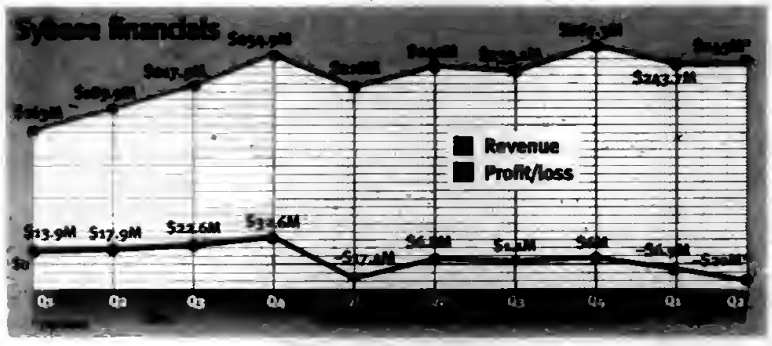
The next step

But after 18 months of losses, what happens next is critical to Sybase's future, said David Readerman, an analyst at Montgomery Securities, a brokerage in San Francisco. "Clearly, SQL Server 11 has not been the answer," he said.

Sybase has resigned itself to being a strong No. 2 database vendor instead of the Oracle Corp. killer some hoped it would be, Readerman said. Brain drain is Sybase's biggest risk, as executives continue to leave the firm for Internet start-ups, he said.

On the business front, Sybase officials recently reorganized the company for greater efficiency and last month recast the company's mission with an eye toward the Internet.

"Sybase's biggest battle is marketing, and these sound like sensible moves," said Tim Johnson, a longtime Sybase user at Deloitte & Touche Consulting Group in Toronto and head of the Ontario Sybase User Group.



Sybase's third loss in the past 18 months also wasn't drastic enough to worry Morgan Gerhart, an industry analyst at Meta Group, Inc. in Burlingame, Calif. "Sybase really needs to excel in data warehousing by pushing its IQ indexing and querying product and on the low end against Microsoft [Corp.] on Windows NT. But there's definitely still hope for them."

Assurances that the cuts wouldn't affect major products such as the SQL Server 11 database comforted Bierzychudek.

Rather than dump the vendor during its rocky periods in 1994 and 1995, he waited out the widely acknowledged scalability limits and bugs in System 10, the previous major version of the Sybase database.

"Version 11 is running on all our processors. We're very pleased with its speed and quality, and

But some industry analysts are unmoved by Sybase's 'net intentions. "It's disconcerting that they have not come out with a strategy yet that clearly defines how their products will work in the Internet model," said Rich Finkelstein, an analyst at Performance Computing, Inc. in Chicago.

Another concern has been Sybase's scattershot approach to multiple technologies. "Their R&D budget is being stretched thin as they do too many things in a mediocre way instead of a few things well," said Kevin Strange, a senior analyst at Gartner Group, Inc. in Santa Clara, Calif.

Computerworld senior editor Kim Nash contributed to this story.

Advertising Supplement

[Un]tangling

The Intricacies of Distributed Computing

In retrospect, the era of mainframe computing was relatively simple.

In today's distributed computing environments, things are very different.

Integrating and managing the IT infrastructure in the enterprise of today can be an overwhelming job.

In retrospect, the era of mainframe computing was relatively simple. Mainframe environments consisted of only seven major components — the host computer, front-end processors, controllers, terminals, modems, dedicated private lines and application tools. For each of these products, there was only a handful of suppliers to choose from.

Distributed computing presents complex challenges

In today's distributed computing environments, things are very different. These environments are vastly more complex, containing hundreds of devices from superservers to PCs; from portable computers to cellular devices; from hubs and routers to gateways and switches; from printers to storage devices. There are hundreds of PC manufacturers and suppliers of communications devices and thousands of vendors of peripheral devices and software. The result? Piecing together the right combination of computing and communications equipment has become a daunting task for technology decision makers everywhere.

Not surprisingly, companies implementing client/server architectures can end up with one-of-a-kind mixtures of hardware, software, operating systems and communications devices. For instance, a Banyan VINES network might be dedicated to the applications of one department, while other departments might be running applications on Windows NT and Novell. And while one department runs NT on Compaq servers, another has Sun workstations running UNIX. Vital network management devices often come from different vendors. And who knows what software is on each PC? Simply put, integrating and managing the IT infrastructure in the enterprise of today can be an overwhelming job.

Telecommunications technologies are proliferating

The same is true for many companies' telecom systems, due to the proliferation of new communications technologies. And the situation is getting even more challenging as computing and communications technologies merge. Companies need to be assured that their current and future network and devices can interoperate. They require systems that can connect all the pieces — today's PBX systems, computer telephony applications, Internet and intranet applications, wireless and infrared devices, network services, and voice, data, image and video — into the emerging world of broadband, multimedia communications.

End-user support costs are significant

Another factor to consider is the cost of end-user support. According to a

An organization devotes so to the management and support it has to divert resources

report from the Gartner Group titled "Total Cost of Ownership: A Powerful Management Tool," support labor represents over 70% of the total cost of ownership in a client/server environment. And over time, the labor component continues to increase, while technology decreases as a percentage of the total cost of ownership. With the growing cost of supporting end users — including education, systems operations and maintenance — client/server computing solutions must include resource and system strategies designed to minimize cost creep.

For example, the average user requires $250 worth of support per month alone for anything from logging in, changing passwords or getting system problems resolved. In fact, the overall cost to equip and support an end user with a LAN-connected workstation can range from $6,000 to $12,000 a year, depending on how often a support engineer must be dispatched on-site, according to G2 Research, Inc., a market research and management consulting firm in Mountain View, California.

Global issues are driving technology

In addition, the internal technology issues facing today's organizations are exacerbated by issues of a more global nature, including:

- blurring of national and international business boundaries
- emphasis on speed to market
- growing role of technology as a competitive asset
- advent of supply chain integration, inter- and intracompany data sharing and communications
- growing reliance on technology for mission-critical business applications
- growing need for business to integrate telecommunications and LAN/WAN capabilities

What often happens is that an organization devotes so much time, money and attention to the management and support of its IT infrastructure that it has to divert resources away from its core competency. And if that organization decides to seek outside help, the services of several companies are usually required, resulting in multivendor compatibility problems and a more precarious planning process.

Effective outsourcing requires infrastructure and technological expertise

If third-party outsourcing companies are to provide corporate customers with a strategic edge in today's era of technology convergence, they need more than just voice or data or networking capabilities. They need to have a sound network infrastructure

much time, money and attention
of its IT infrastructure that
away from its core competency.

coupled with proven expertise in implementing and managing distributed computing environments.

Until recently, few outsourcing companies offered such a comprehensive solution. And those that did charged high prices. Maybe a Fortune 500 corporation could afford a comprehensive management service for its distributed computing resources, but most of the 60,000 mid-sized companies in the United States could not. Instead, IS managers of those mid-sized organizations toiled to create a strategic infrastructure with limited financial and personnel resources, while demands for their time constantly increased.

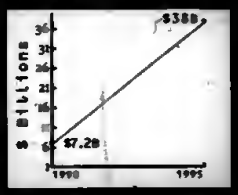
Standardized solutions offer significant advantages

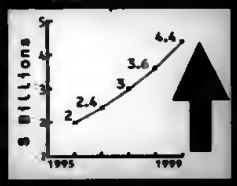
Today's small and mid-sized companies need cost-effective and affordable solutions that can be tailored to their particular business requirements and then implemented quickly, easily and efficiently.

Corporations are starting to realize how costly and time consuming it is to implement and maintain custom solutions. However, a supplier who offers pre-packaged solutions — comprised of state-of-the-art hardware and software from a select group of "best-of-breed" vendors — can significantly reduce both deployment time as well as requirements for ongoing support. With open systems standards-based solutions, small to mid-sized customers can gain access to the leading-edge technology used by large corporations without making costly investments in rapidly changing technology.

"Even the biggest companies are seeing a real competitive advantage in time-to-market, so they are opting for more quickly implemented and low-maintenance, standardized solutions," says Greg Jacobsen, Executive Vice President of Business Strategy and Marketing with SHL, a leader in large-scale systems integration and client/server migration based in Ottawa, Canada. "From Fortune 100 to Fortune 1000 companies, the game now is speed."

"Even the biggest companies are seeing a real competitive advantage in time-to-market, so they are opting for more quickly implemented and low-maintenance, standardized solutions."





Hiring outside communications for companies tomorrow.

SHL in brief

SHL, an MCI® company, is a $1 billion company that originated in Canada over a decade ago. Since that time, the company has been considered a leader in large-scale systems integration, outsourcing, technology deployment and client/server computing migration. The company is also credited with having defined the Transformational Outsourcing services market.

SHL has traditionally focused on three areas of IT expertise:

- Deployment of desktop services, for which SHL provides the hardware, training and support services such as help desks.
- Transformational Services, for which SHL helps customers manage their mainframe applications and the transition to client/server environments.
- Outsourcing, for which SHL provides everything from simple help desks to staffing and managing data centers.

Based on customer requirements, SHL can tailor the solution it offers in any one of these areas or, if a full-service solution is needed, in all three.

The company has over 100 sales and service offices, as well as six outsourcing centers (two in the U.S., three in Canada, and one in the U.K.) with a seventh to open soon in Korea. Overall, SHL has more than 6,000 employees in 32 countries.

SHL was acquired by MCI Communications Corp. in November 1995 and is now MCI's systems integration and IT outsourcing subsidiary. An enterprise services offering is the first package of services to be jointly marketed by MCI and SHL. The package combines MCI's expertise in switched data and Internet services with SHL's leadership in developing and managing client/server solutions for businesses.

SHL
An MCI Company

The standardized solutions required by this new competitive environment mark the beginning of a big change for the third-party outsourcing business—which in turn means more value for customers of this service.

With a standardized solution, the problem-solving process is streamlined as well. Problems that arise are rarely unique and can be resolved quickly — often by telephone. Faster problem resolution will eliminate the frustration users feel toward a changing technical environment, making them more productive in their core business functions.

Providing a total solution

Until recently, a mid-sized business looking for a computing and communications solution that could be tailored to its unique client/server environment had to go to one company for network transport needs and another for network management. "Most companies were unable to reap the full benefits of systems integration because there was no single vendor who could effectively combine the power of communications and information technologies," says Brian A. Brewer, Senior Vice President, Business Marketing for MCI Communications Corp.

experts to handle increasingly complex and computer solutions will be the rule that intend to compete in the arena of

But that situation changed in November 1995, when MCI acquired SHL. The teaming of the two companies allowed them to create a solution that combines MCI's expertise in switched data and Internet services with SHL's leadership in implementing and managing client/server environments for Fortune 500 businesses.

MCI's solution for managing enterprise networks

Beginning in June 1996, this new service will be offered initially to companies with 50 to 500 desktops and up to 10 servers. The turnkey service includes, as standard offerings, proven open-

"Customers today are looking for integrated computing solutions combining networking and telecommunications technologies. Bay Networks has forged sophisticated business and technology partnerships with leaders like SHL and MCI to provide customers with the best turnkey solutions in the marketplace." Jeff McCerthy, Bay Networks' Vice President of Carrier & Integrator Operations.

"We've done much more than just merge the technological elements of computing and communications," says Brewer of MCI. "We've created comprehensive outsourcing solutions designed to solve the special challenges faced by mid-sized businesses across all industries. Specifically, we've standardized what was previously customized — and therefore affordable only to the largest companies — which enables us to bring our solutions within reach of the middle market. And even though our solutions are standardized, they can still be tailored to the specific needs of each customer."

system components such as Compaq ProLiant servers running either Microsoft Windows NT Server 3.51 or Novell NetWare 4.1, hubs from Bay Networks, and routers from Cisco Systems. Standard software applications include Microsoft Office for LANs with management tools provided by Intel.

MCI expects that customers for its new turnkey enterprise management support services will be mainly mid-sized companies, but notes that large departments of multinational corporations might also be potential customers.

"Even though our solutions are standardized, they can still be tailored to the specific needs of each customer."

Infrastructure transition and stabilization

The offering is geared to organizations wishing to acquire, or transition to, a Microsoft NT or Novell NetWare network environment. For those who have existing Microsoft NT or Novell NetWare architectures, this service will eliminate the need to manage the intricate day-to-day operations of running these networks. For those organizations transitioning from another client/server architecture, arrangements can be made to replace the existing equipment with new upgraded hardware and software.

The transition will include a comprehensive audit and assessment of a company's existing infrastructure as the basis for development of an implementation plan. In this way MCI can provide its customers a significantly enhanced operating environment. Organizations and institutions wishing to embark on a new client/server architecture can lease the basic infrastructure, including servers and software, from MCI. Down the road PCs may be also included in the lease, if so desired.

Whether a company is starting out on the road to client/server or they are well on their way, the experience MCI has gained from its growing customer base will benefit each company through lower annual per-user costs of equipping, operating, maintaining and servicing their installed hardware and software base.

Proactive systems monitoring and management

Historically, management and support in a client/server environment were often overlooked, due primarily to a failure to foresee the complex interoperability problems posed to users by this powerful new architecture. Thus, the notion of management and support developed in an ad hoc manner, fragmenting along departmental and operational lines. This fragmented management and control forced users to develop their own informal networks of support, creating invisible costs and inefficiencies in their organizations. Problem resolution was clearly reactive.

MCI's new offering will radically change this situation by providing the foundation for continuous management and control of the desktop, server and network environment with its "over-the-shoulder" support service. This is made possible by the open standard selected for the new service, and by development of sophisticated management and support centers capable of resolving all problems presented by the desktop, server or network. This highly integrated technical support base will enable MCI to proactively search for and rectify problems before they become apparent to the user community.

This proactive approach will lead to a considerable improvement in network efficiency and, thus, user satisfaction. Costs are reduced by eliminating the need for peer support and by centralizing the fragmented support and control facilities. MCI estimates the use of its enterprise network management offering will result in more than 99% uptime for all users. "Today's desktop business applications are absolutely critical to a company's success," says SHL's President, Technology, Bill Trafford. "That's why our goal is to provide a service that offers the highest possible degree of reliability."

End-user support and problem resolution

MCI's offering has been specifically designed to provide the customer user community the best support in the industry. The centralized support facilities will allow for deployment of superior tools and a concentration of resources not available to the vast majority of organizations. When problems do arise, a qualified technical representative can lead the user to a solution remotely, by sharing that user's screen. If the problem cannot be solved interactively over the network, MCI will dispatch a field service engineer from the most appropriate help desk center in North America to deal with it.

Resolution is expedited through MCI's vast knowledge base and expert systems,

The outsourcing advantage

Outsourcing hes emerged as a strategy used by many businesses to create a competitive edventage. Today, it is commonly thought of as a means of redirecting rather than replacing resources.

Many companies employ outsourcing to allocate resources more efficiently, allowing their employees to do the jobs they were hired to perform. Organizations also use outsourcing to segment functions and tasks that can be hendled more efficiently by a third-party expert who has achieved economies of scale through lower cost structures and greater purchasing power.

Companies outsource to solve tactical, near-term issues and to achieve strategic, long-term benefits. According to The Outsourcing Institute, these are the top reasons companies outsource:

- They do not have access to the required resources internally. If an organization is expanding its operetions, especially into a new geography, outsourcing is en alternative to building the needed capability from the ground up.
- They want to reduce and control operating costs. By accessing an outside provider's lower cost structure, which results from greater economies of scale or another advantage based on specialization, they realize greater savings.
- To contract for resources on an as-used basis rather than through capital expenditures. Outsourcing also permits an organization to redirect its resources from non-core activities to those that better serve the customer.
- Markets, competition, government regulations, financial conditions and technologies all change quickly. When companies outsource they gain the flexibility to meet changing opportunities.
- To immediately realize the benefits of business process reengineering by having an outside organization — one already reengineered to world-class standards — take over the process.
- By working with an outsourcing firm, a company can gain access to new technology, tools and techniques without incurring the costs of chasing technology and the training costs associated with each new generation.
- By having an outside expert assume operational details, outsourcing lets a company focus on broader business issues, such as customer needs. For many companies, the most compelling reason for outsourcing is thet "how to" types of issues are siphoning off huge amounts of management's time and attention.

The need for pre-packaged deployment and management services will soar.

with an inference engine capable of fully exploiting the information critical to solving user problems. To stay on the leading edge, this vast knowledge base is constantly kept up-to-date. The "over-the-shoulder" tool, with the user's permission, provides the ideal platform for diagnosing and resolving problems right on the user's PC. MCI also uses a sophisticated database to manage each problem ticket, guaranteeing that all problems are tracked and dealt with in a timely manner.

"End users like the concept that if anything breaks, they need to call only one number and we'll get on track to fix it immediately," says Trafford.

Benefits to mid-sized companies

Market research firms expect the need for pre-packaged deployment and management services to soar. As the number of desktop computers continues to rise, so will the number of LANs. However, LAN interconnection via a WAN is too complicated for many mid-sized companies to manage on their own. But with an enterprise network management service such as the one offered by MCI, these companies will no longer have to worry about the complexities of distributed computing. Instead, they can rely on MCI to provide the following:

- Network management, so companies can concentrate on their core competencies
- Hardware and software management to ensure compatibility and interoperability and to minimize obsolescence
- Comprehensive support designed to eliminate the hidden costs of peer support downtime, slow help desks, etc.
- Proactive network monitoring, designed to solve end-user problems remotely, before they happen or affect productivity
- "Best of breed" vendors to ensure maximum performance and reliability

The results of outsourcing

- Increased productivity through improved end-user performance and satisfaction
- The ability to share information across the enterprise more quickly and easily.
- Improved service to clients

Hiring outside experts to handle increasingly complex communications and computer solutions will be the rule for companies that intend to compete in the arena of tomorrow. It will allow them to achieve bottom line benefits such as performance enhancement while allowing them to concentrate on their core competencies.

To learn more about how MCI can help you manage your communications and computing infrastructure, call us at 1-800-338-6815.

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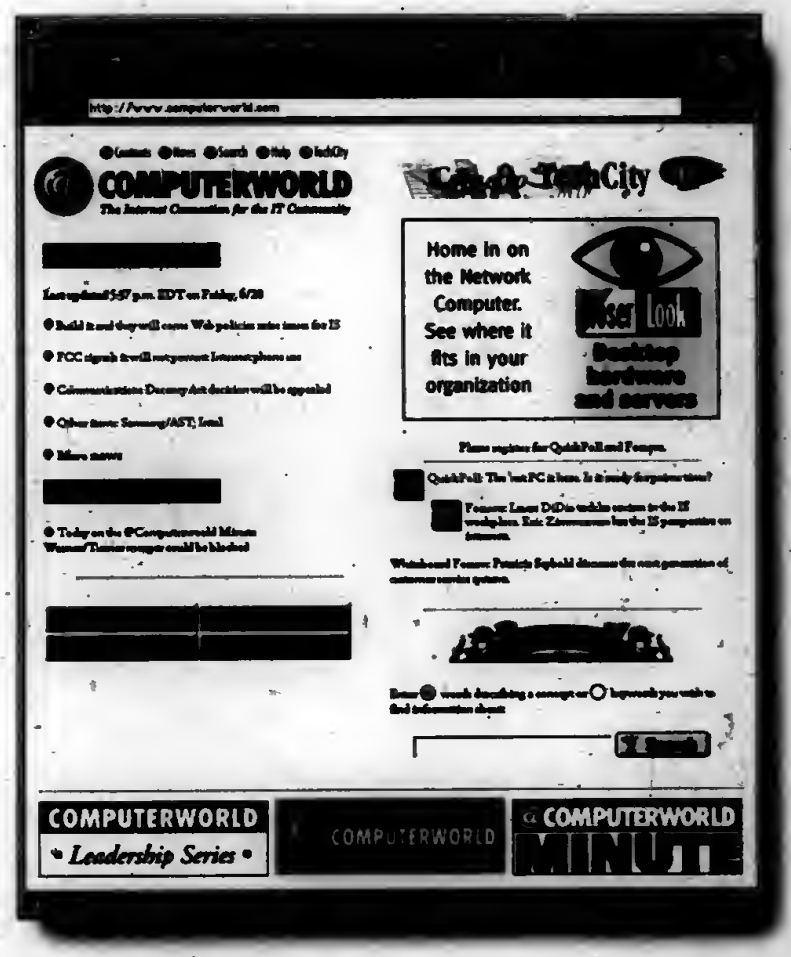

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You see a horse race. We see two thoroughbreds.

A lot of other companies do, too. They're running both the Windows® 95 and the Windows NT® Workstation operating systems. Why? Because they want to realize the benefits of a more reliable, more manageable operating system. They also want to run the latest versions of their applications* and take advantage of exciting new Internet technologies. That's why seven out of ten organizations** have deployed (or are planning to deploy) Windows 95 and/or Windows NT Workstation: They know that both are safe bets.

The reason we developed both operating systems is twofold: First, to achieve maximum compatibility with our customers' existing hardware and software, and second, to provide them with an even more reliable and secure operating system. Today, customers can run most of the same applications across both Windows 95 and Windows NT Workstation. And soon, with the release of Windows NT Workstation 4.0, both products will share the same user interface.

What's the right mix for your organization? That depends on what you need. **Windows 95** is the easiest way to migrate to 32-bit Windows. It not only supports a third more hardware devices than Windows NT Workstation, it also has lower system requirements. Windows 95 also offers greater compatibility with certain MS-DOS® applications. What's more, it has two functions that Windows NT Workstation, for the time being, does not: Plug-and-Play, and Power Management for mobile users. **Windows NT Workstation**, on the other hand, offers greater reliability and security, thanks to its advanced microkernel architecture. It's simply one of the most powerful and robust 32-bit desktop operating systems you can get.

So if you thought you needed to hedge your bets, you don't, because this is no horse race. In fact, we will continue to support and update each product in the future since our customers continue to want both the broad compatibility of Windows 95 and the power of Windows NT Workstation.

For more help determining the best mix for your company, visit www.microsoft.com/windows/mix2/

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Get a grip

There is a curious refrain some information systems managers have been repeating lately, and it has me concerned. It goes something like this: "We're not really worrying about the Web. That's all corporate image stuff. The marketing/PR/sales department does its own thing with it."

Big mistake.

Because if you don't have both hands wound tightly around the World Wide Web steering wheel soon, you risk being handed the controls after the car has already gone over the cliff.

True, most companies still use the Internet as little more than an electronic billboard at the moment, but that's going to change quickly.

This year, there will be $300 billion in electronic data interchange transactions, all of which are candidates for the Internet.

Markets for hard-to-find items such as specialty parts or commodities such as compact discs will move rapidly to the Internet because it just makes more sense to transact business there.

Internal intranets will alter the way companies communicate internally. Don't you think you should be involved in that?

Some interesting figures came out of surveys of chief information officers at *Computerworld*'s Intranet '96 conference last month in San Jose, Calif. While the results aren't scientific, they yield insights into what some of the leading-edge CIOs think about internal and external webs:

- Nearly 60% said they expect to do secure transaction processing on the Internet within a year.
- 65% expect the browser to be the universal application front end within five years.
- 80% say intranets offer a high return, and most of them say it's at a low risk.
- More than 80% share or own responsibility for applications development for intranets.

So what are you waiting for? With intranets, says IBM CIO Gerry Prothro, "CIOs become managers of intellectual capital assets." That's a role I'd think any IS manager would covet.

Paul Gillin, *editor*
Internet: *paul_gillin@cw.com*
www.nltranet.com/~pgillin

"GENTLEMEN, WE NEED TO TALK. WE'RE A FORTUNE 500 COMPANY AND OUR WEB PAGE HAS 'IN-A-GADDA-DA-VIDA' AS ITS BACKGROUND MUSIC."

Iceberg meltdown slips up Registry

By Michael Goldberg

Taking issue with StorageTek reports

Your recent articles on the DASD marketing agreement between IBM and StorageTek ["In disk-array: Defections, late product force IBM reliance on StorageTek," CW, June 17], as well as problems at the Massachusetts Registry of Motor Vehicles ["Iceberg meltdown slips up Registry," CW, May 20] reveal some clear between-the-lines editorializing and bias.

The article on the IBM/StorageTek marketing agreement, an arrangement that has been viewed in a very positive light by most in the industry, is laced with negative connotations and phrases, such as "stunning decision," "emergency assistance" and "embarrassing codependence." One might think after reading the article that the objective of this agreement was nothing less than to avert absolute ruin.

Then when a StorageTek Iceberg failure occurs at the Massachusetts Registry of Motor Vehicles, the story is in blazing headlines on the front page. When it's an EMC failure that brings the system down, it's tucked neatly and cleanly away on page 131 ["Second crash brings down Mass. registry," CW, June 17].

Your philosophy of customer advocacy is admirable, but the sight of more and more obvious bias appearing in your articles is frankly surprising and disappointing. I guess the mainstream media isn't the only place where credibility doesn't mean as much as it used to.

Rick Bieber
Development engineer
Storage Technology Corp.
Louisville, Colo.
richard_bieber@stortek.com

Where's Merlin?

The IBM Merlin beta (OS/2 Warp) has been out for two weeks. Not a word in your publication. Won't Microsoft let you write about it?

Benny N. Ormson
Edmond, Okla.

Editor's note: Actually, we have not only been writing about the Merlin beta, but we scooped the IBM official announcement of its voice-enabled capability. For some recent OS/2 Merlin stories, please check these issues: July 1, page 48 ["OS/2 Warp upgrade to include Notes electronic-mail client"]; June 17, page 65 ["OS/2 gets symmetrical; Merlin to feature network management, four-way SMP"]; May 13, page 72 ["Bank's customer service boosted with OS/2 Warp"]; April 22, page 6 ["OS/2 Warp to use voice-activated interface"]; April 8, page 6 ["IBM waves wand at Merlin; OS/2 Warp upgrade to offer Web browser, remote access"].

A CASE study

In the IBM DB2 article ["IBM's DB2 makes its mark with improved OLTP performance," CW, June 17], you explain SQL CASE statements as computer-aided software engineering statements. Obviously, one of your writers and some editors know what CASE stands for.

The only problem is it has other meanings [besides] the one cited. And since the one you mention makes no sense in the context of SQL statements, either you guys made an error or IBM did. I would guess that CASE here means a structured programming construct for a CASE statement to interrogate different values of a field.

Kalman Kahan
Federal Reserve Bank of New York
New York

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

FROM A BULLETIN DISTRIBUTED BY META GROUP, INC. IN STAMFORD, CONN.

With 1997 the outside limit for beginning year 2000 conversion efforts, users who have not yet sized or budgeted [the conversion project] must quickly develop conversion metrics, since imminent 1997 budget planning cycles will preclude most detailed third-party studies.

Users unable to make the 1997 budget cycle will likely face 50% higher costs due to the market's limited supply and huge demand for [year 2000 project] skills and resources.

FROM A COMPUTERWORLD HONG KONG INTERVIEW WITH DENNIS HAYES, CHAIRMAN OF MODEM MAKER HAYES MICROCOMPUTER PRODUCTS, INC.

Everyone keeps talking about the demise of the analog telephone line, but it's the only service that's available everywhere with standard connectors. So if you want something that's ready to install and ready to go, that's the infrastructure that's there to use. We think that it will continue to be important for quite some time.

We think that [Integrated Services Digital Network] will become important next year and begin growing. We think that the year after that, Asynchronous Digital Subscriber Line will probably become important in certain areas. Then, most likely, cable modems will actually become more important.

There are two problems with the cable modem right now. One is that it's too expensive. The other, more basic problem is that right now, cable-oriented equipment is only provided through the cable companies. You can't go into a PC shop and buy cable. So the distribution system is going to have to change. In order for that to work, the cable companies have to open up for customer-owned equipment and patching — the way the telephone companies do. That's going to require standards being set up, and the standards aren't quite completed yet.

Walk a mile in the consumer's shoes

Robert L. Scheier

To: Retail information systems executives

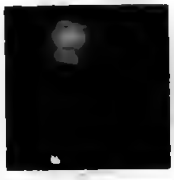
From: The ever-elusive consumer.

I hear that you want to get to know me. You want to understand me better because you've built too many stores, stocked too much merchandise and taught me to "never, ever pay full price."

I know this because Computer Sciences Corp. and *Retail Info Systems News* surveyed 300 IS executives and found they think "a stronger focus on the consumer is the road to prosperity." Being IS types, this means quadrillion-terabyte data warehouses and the ability to analyze sales by fabric, price, location, temperature, religious holidays or any other bizarre variable.

These big information systems can answer the big questions. But here's an easier way to get real close to the customer: Walk into one of your stores with me and see what shopping there is really like. Without even charging an hourly fee, I'll tell you what I see and what IS could do to fix it.

Example No. 1: It's 90 degrees outside, and a frazzled-looking guy comes into a leading, IS-savvy home-improvement discount warehouse looking for an air conditioner. He's holding a circular with the brand, model and SKU number of the item he wants. He asks a clerk where to find this air conditioner.



Terabyte databases are nice, but please help this man find the air conditioner he wants.

The clerk is standing next to a scanner-equipped point-of-sale (POS) system that is undoubtedly satellite-linked to every piece of the supply chain. But he just shrugs and points vaguely toward a hand-lettered sign that says "Fans and air conditioners." The customer wanders down the aisle, clutching his flyer as he looks helplessly at 50-ft.-high shelves stocked with every kind of fan and air conditioner except the one he wants.

Suggestion No. 1: Provide video kiosks with maps of the store that show the location, by SKU, of any product in the store. Or use a flat-panel display technology called paper to print maps of the store. What's the use of a chief information officer if he can't tell a sweating guy with $250 in his pocket where to find an air conditioner?

Example No. 2: A customer buys a camcorder at a large discount store after a salesman checks his register and assures him it's in stock. The customer waits 10 minutes at the pickup area before a clerk says it isn't in stock but should be in by the middle of next week. Several days later, the camcorder still isn't in stock. No one knows when it will arrive.

Frustrated, the customer goes to another branch of the same chain. The sales clerk says he can't check inventory from his register and sends the customer to the pickup desk. The pickup desk clerk says the camcorder is in stock, but the store can neither deliver a product nor issue a credit for a product purchased at another store in the same chain. So the customer has to purchase a second camcorder and return to the first store to void the original sale.

Suggestion No. 2: Inventory systems should accurately track whether merchandise is in stock, en route or on order. They should have real-time links to POS scanners so when the last of an item is sold at register A, that fact is instantly updated at register B. And why can't the systems that track credits, refunds and pickups be linked between stores?

I could go on, but I know you're busy building mega-systems that will help you understand your customers. If you want me, I'll be shopping at one of your competitors.

Scheier, a *Computerworld* senior editor, management, does a lot of catalog shopping these days. His Internet address is robert_scheier@cw.com

Complexity: The weed that could choke IS

Max D. Hopper

Corporate buyers have come to expect more bang for their technology buck. But the drastic plunge in RAM prices over the past six months is an unprecedented windfall. Clearly, we aren't buying the current generation of RAM-crammed PCs at the rate for which memory chip makers geared up. But why?

Some analysts say the reasons include capital spending reductions, three-year cycles in investment strategies and even a wait-and-see posture that arises from the emergence of low-cost Internet terminals. But there's another factor in this technology spending downturn that has received far less attention than it deserves: complexity.

A major barrier to sustained growth levels is the growing difficulty of mastering new information technology tools. Their seductive capabilities are a Faustian bargain. The price we pay is the soul-draining, mind-numbing effort required to make all this stuff work together. This challenge can overwhelm the most resourceful IS department and reduce the typical end user to glassy-eyed paralysis.

Years ago, the IS challenge involved far fewer components and affected far fewer users. As the linkages among systems and people multiply exponentially, so do the challenges of integration and interoperability.

Faced with a mind-numbing array of new technologies, CIOs have to stay focused on business needs.

The arduous learning curve and the escalating cost of managing our enterprise systems diminish our ability to assimilate technologies at the rate they're cooked up. Having feasted for years, is it any wonder that a period of digestion is in order before we can get our appetites back?

One part of the complexity issue is the accelerating pace of product introductions. Intel's 486 chip ruled the PC world for three years, but its successor, the Pentium, was on the market only half that long before Intel introduced the Pentium Pro. Now the software industry runs on "Internet time," in which companies such as Netscape release software versions every few months.

Meanwhile, technology pundits say that over the next few years, most IS departments will be building intranets, redesigning their applications to be network-centric and moving from two-tier client/server systems to multitiered ones. One survey of 350 corporations found that 75% of IS departments had undergone a reorganization within the past year, and nearly 80% expect another one in the next year.

In this seething environment, it isn't surprising that "managing change" is considered the No. 1 challenge for IS groups. But there are several things that CIOs can do to foster organizational success amid incessant change and expanding complexity:

- Employ risk-management techniques that eliminate or minimize the threat of encroaching complexity. For example, strengthen your measurement and project-monitoring capabilities to prevent IS project meltdowns.
- Create flexible, open-ended architectures that insulate your systems from the dangers of developmental dead-ends.
- Most of all, focus on understanding your firm's business needs so you can acquire and/or develop the appropriate systems to meet those needs.

Complexity is the ever-present weed that threatens to strangle our productivity gains. It will take some vigilant gardening on our part to keep it from taking root.

Hopper, former chairman of AMR Corp.'s Sabre Group, is principal at Max D. Hopper Associates, Inc., a consultancy in Dallas.

"In order to make the right decisions, you've got to have the big picture. But where is it?

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Vendors vie for floppy territory, 40

Servers & PCs

Groupe Bull trots out Unix cluster

Firm seeks to shake me-too server image

By Craig Stedman

Groupe Bull is giving the U.S. Unix server market the old college try again.

To date, the French vendor has been little more than a tourist on these shores with its servers. But it is trying to become a bigger factor here with a new high-end clustered system that supports up to 32 PowerPC processors and can be preconfigured with software from vendors such as Oracle Corp. and SAP AG.

The Sagister machine, which runs IBM's AIX operating system, will be accompanied by an expanded marketing and sales effort that goes beyond Bull's dwindling mainframe installed base for a change. The company said it will start targeting AIX-equipped IBM RS/6000 shops later this year.

Providing discipline

To a Bull mainframe customer such as Al Simon, a database administrator for Genesee County in Flint, Mich., Sagister represents a potential way to impose more big iron-like discipline on his growing Unix environment.

"When you bring in all these little Unix guys, they bring their own set of problems with administration," Simon said. Systems administrators responsible for different Unix servers "tend to get in their own little worlds and stay there," he said. "It's difficult now to pick up for each other because we don't know each other's machines very well."

Processors: Six to 32 133-MHz PowerPC 604 chips
Number of active users: 2,000 to 5,000
Main memory: 512M bytes to 8.2G bytes
Disk storage: 20G bytes to 8T bytes
Price: $700,000 to $2 million
Availability: August

Sagister, which clusters up to eight four-processor servers, could allow Genesee County to recentralize operations on the Unix side, Simon said. The county will likely consider a purchase next year, although the system may be overkill for it in terms of price and raw power, he said. Four of Genesee County's five Unix servers are Bull systems. But Bull's overall Unix presence is relatively minimal in the U.S.

For example, only 2% of 383 U.S. Unix sites surveyed recently by Datapro Information Services Group, Inc. in Delran, N.J., said they use Bull equipment. Bull didn't rank among the Top 10 U.S. vendors of Unix servers last year, according to International Data Corp. in Framingham, Mass.

"As a Unix vendor, we've frankly been a me-too company up until Sagister," admitted Dwight Ogleby, director of enterprise product marketing for Bull in North and South America. Bull's PowerPC-based Escala servers, which are the building blocks for Sagister, mimic IBM RS/6000s, he said.

Sagister continues to rely on IBM by using pieces of IBM's Unix clustering software to link multiple Escalas. Bull is trying to differentiate itself with Sagister's integrated architecture, which includes its ISM/OpenMaster management software and support for preconfiguring other vendors' software on the machines.

Products that can be factory-installed include Oracle's database and SAP R/3. Oracle's client/server applications and Informix Software, Inc.'s database are due to be added in the fourth quarter.

Wolfpack calls the shots

By Jaikumar Vijayan and Laura DiDio

Even though Microsoft Corp.'s Wolfpack NT clustering software isn't at the front of the pack, it is still dictating the rest of the industry's development plans.

Ultimately, that may be good news for users.

Clustering

Customers "can be reasonably reassured" that if they go with NT clustering technologies from vendors other than Microsoft, "they will still have a relatively easy migration path to Wolfpack if they want it," said Tom Kucharvy, president of Summit Strategies, Inc., a consultancy in Boston.

Wolfpack will let network administrators tie two NT servers together in a "high-availability cluster."

If one server goes down, the other will automatically take over and ensure that network operations aren't disrupted.

Microsoft's product is expected to be in beta testing in the first quarter next year, with general availability sometime in the second half of the year. This delivery schedule is well over a year behind hardware powerhouses Digital Equipment Corp. and NCR Corp., both of which already ship clustering on their servers, and Compaq Computer Corp.

But Digital, NCR and several other major hardware vendors — including Compaq, Hewlett-Packard Co. and Tandem Computer Corp. — recently rushed to announce support for Wolfpack.

This frenetic activity is being driven by the growing popularity of NT Server and the need to develop an industry-standard clustering technology for the operating system.

Market research firm International Data Corp. in Framingham, Mass., estimated that Microsoft will ship about 400,000 copies of Windows NT this year and about 800,000

Wolfpack, page 40

SHOPPING FOR A 17" MONITOR?
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"If you stare into only one 17-inch screen this year, let it be Nokia's..." said the editors of *Home Office Computing*. Excellent advice. If you want to rub your eyes in astonishment – not irritation.

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447L	100Hz	100Hz	80Hz			
447W	100Hz	100Hz	100Hz	90Hz	79Hz	
447X	110Hz	110Hz	100Hz	90Hz	76Hz	85Hz
447Xi	150Hz	140Hz	110Hz	100Hz	85Hz	72Hz

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Vendors vie for floppy territory

Users ask that more capacity be included

By Justin Hibbard

Two competing technologies are trying to replace the 1.44M-byte floppy. But users want to make sure the winner remains backward-compatible with the floppy that has been their desktop standard.

The two main contenders for the floppy drive's real estate are Iomega Corp.'s Zip 100 drive and Ocean Radio Technologies, Inc.'s LS-120 drive.

Both vendors have a shot, most observers agree.

But the need for a medium such as the floppy is disappearing, at least in corporate America, according to Robert Abraham, an analyst at Freeman Associates in Santa Barbara, Calif.

Most software is distributed on CD-ROM instead of diskettes, Abraham said. And most big companies use LAN servers for storage and tape for backup.

Nevertheless, many corporate users still want removable storage in their systems, said David Strom, an independent consultant in Port Washington, N.Y.

Users "will care when the time comes for them to move a bunch of files from work to home," Strom said. "People are always going to want to have the ability to move data around other than on their LAN."

Users like floppies

PC vendors echoed Strom's sentiments. They said commercial users still want removable storage — but with more capacity than 1.44M bytes.

Not all high-capacity drives can read and write to the 1.44M-byte floppies on which users' data now resides.

"One of the things we've learned from our customers is they would like somehow to maintain compatibility with the 1.44M-byte floppies," said Rodney Adkins, general manager of commercial desktop systems at IBM.

To that end, Ocean Radio's LS-120 drive contains read/write heads for the 1.44M- and 120M-byte LS-120 disks.

Removable storage drives

	Iomega Zip 100	Ocean Radio Technologies LS-120	Standard floppy
Disk capacity	100M bytes	120M bytes	1.44M bytes
Maximum sustained transfer rate	1.4M bytes/sec.	965K bytes/sec.	62K bytes/sec.
Built-in operating system support?	None	Windows 95, Windows NT	All systems
Price	$199	$220	$50 to $60

The 120M-byte disk comes in the same 3½-in. casing as the 1.44M-byte floppies. Both disks fit in the same slot.

Iomega's answer for compatibility is to install a Zip 100 drive and a floppy drive in the same PC.

Stan Corker, an analyst at International Data Corp. in Framingham, Mass., claimed that such a configuration would cost PC makers $25 less than installing an LS-120 drive. Ocean Radio CEO John Haughey disputed Corker's claim and said prices for the LS-120 will fall as volume production increases.

Currently, Compaq Computer Corp. offers an LS-120 kit for $210. The Zip 100 drive costs $199.

Corker said the backward-compatibility issue has been overstated.

He pointed out that during the 1980s, PC makers successfully steered users away from 5¼-in. floppies and toward 3½-in. floppies by installing drives for both disks in their machines. He said PC makers are doing the same thing now doing with the Zip 100 and the 3½-in. floppy.

But "people don't want to be bothered with having more than one floppy drive," Strom said.

Wolfpack

CONTINUED FROM PAGE 39

next year. Other vendors are looking to "Microsoft to provide a standardized, base-level high-availability cluster" that they can leverage with their own clustering products, said James Hurley, an analyst at Aberdeen Group, Inc. in Boston.

The high availability and scalability provided by clustering technology will make Windows NT a safer place to migrate business applications to, analysts said.

"Clustering is one of those big-ticket items we've been looking forward to with great anticipation for a long time. We need scalability, power and fail-safe backup," said Gary Wilkerson, program and external services administrator at Kaiser Permanente Health Plan, Inc. in Atlanta.

The company is implementing a new electronic medical record system to support about 2,000 clinical health care professionals.

It is an area where "system failure is not an option," Wilkerson said.

Add-ons

Analysts said they expect the arrival of Microsoft's software to force third-party vendors to layer additional features on top of Wolfpack, to differentiate themselves.

"These 'extras' could be things like application recovery kits and enhanced tools to install and manage the cluster," said Jane Wright, an analyst at Datapro Information Services Group, Inc. in Lexington, Mass.

"The failover itself is only the first step; then you need to recover your applications," in the event of a system failure, she said.

Other enhancements may include recovery kits for applications such as Oracle Corp.'s database and integrated TCP/IP support, which some vendors will offer with their clustering products. Vendors also could differentiate themselves by offering features such as the automatic reconnection of multiple, non-Microsoft clients on the network, analysts said.

NCR plans in the third quarter to increase the number of servers that can be linked in a high-availability cluster. The company will upgrade its LifeKeeper to support three-way fail-safe clustering, said Martin Sinnot, director of Windows NT marketing at the firm.

Windows NT clustering software

Vendor	Compaq	Digital	NCR
Servers supported	ProSignia or ProLiant	Alpha and Priorís	WorldMark
Proprietary hardware required	Smart-Array controller, ProLiant storage system	None	None

Source: Datapro Information Services Group, Inc., Delran, N.J.

PCI plugs in to clustering

While the industry slogs toward a PC clustering standard, plenty of small, bedeviling details remain. For instance, the standard Peripheral Component Interconnect (PCI) bus, now the standard for add-in cards for desktop PCs and servers, can be slow and unreliable for high-powered environments.

The PCI bus has been deemed adequate for most applications. But high-end applications — such as databases and financials — and clustered server environments will require faster throughput and increased reliability, said John Dunkle, president of Workgroup Strategic Services, Inc., a consulting group based in Portsmouth, N.H.

For faster throughput, several vendors are working on a 64-bit implementation of PCI, which currently runs at 32 bit/sec. Digital Equipment Corp. already offers a 64-bit PCI chip set for its Alpha line.

Other vendors may get on board by year's end, said officials at several PC vendors.

For increased reliability, several industry players tout Hot Plug PCI technology that will let users expand, upgrade or replace PCI cards without having to take a server off-line.

The first implementation, which will allow for the replacement of PCI cards, will be available in the first half of next year, said officials at Compaq Computer Corp. in Houston.

— Bob Francis

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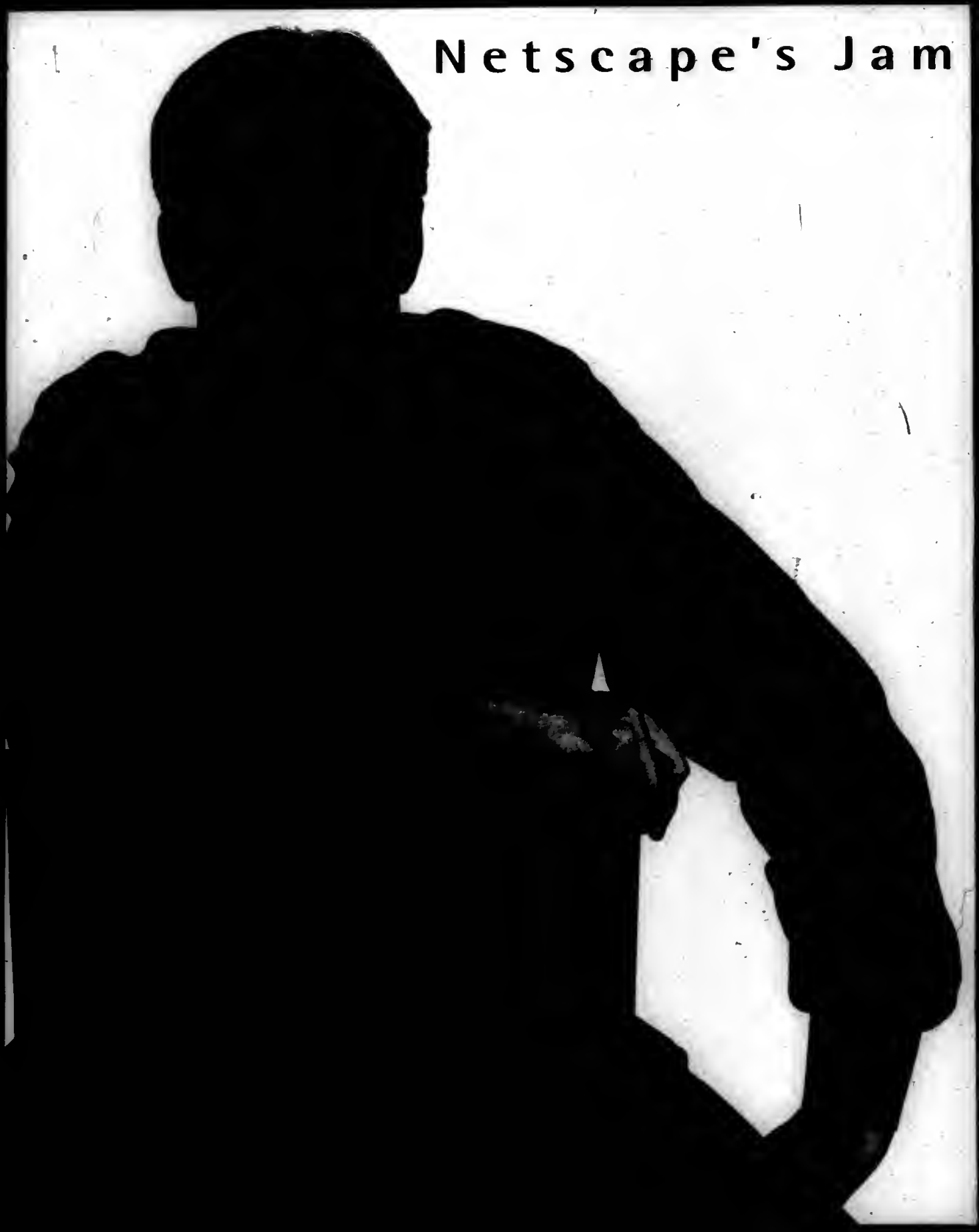
Netscape's Jam



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President and CEO, Netscape Communications

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Jeff Hudson
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J. D. Edwards' OneWorld software eases client/server migration, 48

Software

'I want my Windows NT'

User demand drives up sales of NT-based enterprise systems for client/server

By Julia King

Users say a simplified client/server environment and lower costs are the key factors driving their growing preference for Windows NT-based integrated software suites.

And there is no doubt that Microsoft Corp.'s Windows NT is gaining ground in the enterprise packaged-applications arena, especially at midsize companies.

Client/server leader SAP AG estimated that between 25% and 30% of all new SAP R/3 systems in the U.S. are purchased to run on NT and Microsoft's SQL Server 6.0. In Europe, the figure is closer to 50%. SAP has said an NT version of R/3 since last fall.

PeopleSoft, Inc. in Pleasanton, Calif., estimated that 10% of its customers run their applications on NT.

Consumer demand

Meanwhile, Baan Co. in Menlo Park, Calif., is scheduled to ship NT versions of its Baan IV manufacturing and financial applications by year's end.

There is already "pent-up demand" for the NT-based applications, according to Rocky Gunderson, vice president of marketing at Baan. But Gunderson said he has no specific forecast figures.

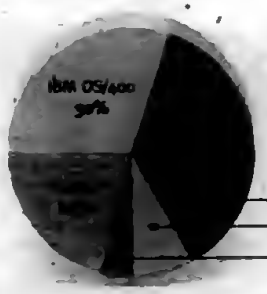
Westinghouse Hanford Co. in Hanford, Wash., a unit of Westinghouse Electric Corp., has used the PeopleSoft NT-based human resources package to track the payroll and training records of about 40,000 staffers.

Westinghouse considered other operating systems, including Unix, but ultimately, "we just felt that the maintenance burden would be higher" with Unix, compared with NT, said Frank Calapristi, a systems analyst and project leader for the human resources system.

Myron Menck, director of information systems at Houston-based Pennzoil Products Co., said his firm chose NT instead of Unix to streamline its systems infrastructure. Pennzoil is implementing an NT-based SAP R/3 system, which will be rolled out next year to several hundred users in its manufacturing and marketing divisions.

"You only have one flavor of NT vs. many, many flavors of Unix," Menck said. This works to simplify systems administration hassles and thus reduces costs, Menck said. "We also felt that NT would become a robust enough operating system to support the business within the time frame we needed," he said.

"We are not deploying any Unix as far as enterprise applications are concerned," Menck said.



Enterprise applications revenue by operating systems

Source: Advanced Manufacturing Research, Inc., Boston

But marketwide, Unix systems aren't about to bite the dust any time soon. Analysts said mainframes and Unix servers will remain very viable choices for high-volume transaction systems at large companies — at least for the next few years.

"NT [usage] is increasing at double-digit rates, but there are still some scalability issues, which is why Unix still has a big role going forward," said Ed Black, an analyst at Aberdeen Group, Inc. in Boston.

If you need to run a database that is in the gigabyte range, NT can handle it. "But if it's a terabyte database, you're probably going to want Unix," Black said.

Mixed systems

According to numbers gathered by Sentry Market Research, Inc. in Westboro, Mass., users of enterprise applications from PeopleSoft, SAP and Oracle Corp. "continue to favor Unix by about 2-to-1," said analyst David Brousell.

But mixed Unix/NT networks also are becoming more prevalent. For example, in less than two years on the market, NT has found its way into 30% of PeopleSoft sites, 65% of SAP sites and 47% of Oracle sites, Brousell said.

"There's clear evidence that Unix is more entrenched. But in a short period of time, NT has already gained a lot of installations," he said.

All roads lead to the 'net

By April Jacobs

Geographic information systems (GIS) technology has finally made it onto the Internet, giving users easy access to spatial analysis data.

And as more companies look to use data generated from maps to help manage their businesses, the market for GIS technology grows.

According to officials at Cambridge, Mass.-based Daratech, Inc., GIS software revenue grew 18.3% last year, to $548 million.

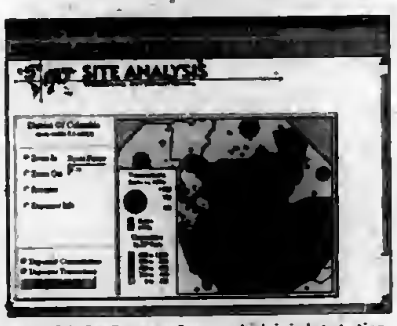
So far, only MapInfo Corp. in Troy, N.Y., has a World Wide Web-based application suite — ProServer — but others may soon follow, said Scott Nelson, research director at Gartner Group, Inc. in Stamford, Conn. Nelson said he heard through the grapevine that at least one other major vendor is putting together an application for the Internet, but he declined to name the vendor.

Mapping software

Future plans

In the meantime, AT&T Corp.'s Atlanta office is beta-testing MapInfo's ProServer software and plans to use it to protect its fiber-optic cable lines against damage from construction and other heavy equipment.

Ashar Syed, supervisor of software development at AT&T, said the company uses a centralized mapping system that holds the locations of its fiber-optic cable across 48 states.



MapInfo's ProServer *software, which is in beta testing, lets this fictitious company analyze geographic data via the Internet*

Syed said he wants his technicians to be able to access that information remotely over the Web.

When anyone needs to dig in a location that may have buried cable, an AT&T technician can access the information and assess whether it is safe to dig there, he said.

"We have street maps and cable maps, and we can determine automatically if we have any cable close to the address," Syed said.

Cost savings

James Rapinac, vice president and industry analyst at Daratech, said use of corporate intranets and the Internet will make it easier and more cost-effective to implement projects such as AT&T's.

A major advantage of MapInfo's suite is that the company charges for licenses based on the number of people who need to access the application instead of the total number of desktops in the company.

"Since maps are not part of the technician's basic job and are only something they will use once or twice a week, it's cost-effective. We won't have to deal with more than 1,000 licenses," Syed said.

MapInfo is beta-testing its ProServer Web-based software suite and allowing users to download The Beta Lab free of charge. It can be accessed at www.mapinfo.com.

Getting back quality software

By David Wright

The really sad thing about our increasing crop of buggy software is that it has lowered everyone's standard of what constitutes acceptable quality. And the even sadder thing is that it's all fixable — if we really want it to be.

As things stand now, reams of beta-quality software are sold under the guise of fully tested, production-quality applications. The resulting software patches bring us new bugs and break previously working functions. Users joke about Version 1.0 of anything as a matter of course.

So what exactly are some of the changes we need to embrace to begin fixing our software-quality problem? First, we must decide whether we really want to pay the price for producing quality software — that is, software that's intuitive, complete and, most important, not broken.

> Quality software takes time, and it certainly costs a little more.

Slow process

Quality software isn't fast or cheap. If you want a fast, cheap meal, you go to hamburger city. If you want a quality dinner, you go to a better restaurant and wait a little longer and pay a little more. Quality software takes time, and it certainly costs more.

Next, begin separating your politics from your engineering

Think of the last time you paid the price for compromising engineering at the altar of salesmanship and positioning.

Some principles in the software construction business are timeless. They include problem definition, requirements analysis, design reviews, code walkthroughs, process controls and testing. Activities such as these are completely independent of the technologies employed and imbue far more quality to the software product than employing the latest widgets.

When was the last time you determined that one of your products was substantially flawed because it wasn't written in Visual GUI or because your developers felt compelled to wear ties?

And don't be fooled with the idea that hiring the best programmers will solve your problems. It's certainly true that hiring the best people you can afford will increase your chances for producing quality software, but it's no guarantee. Collecting your best programmers into a strike-force team doesn't translate into automatic success without a sound engineering framework in which to work.

Given these adjustments, we may still feel hammered to ship a product before it's ready.

I'm surprised how easily scheduling dictates are accepted without much effort to educate the people who hand them down. It's hard to criticize these people because they're just doing their jobs.

The fault is really ours because it's our job to estimate and educate the parties involved about the resources needed to ensure quality. By not doing so, we effectively abdicate our ability to affect anftware quality.

A little sweat

Last, organizational structures must exist that address software quality. Building trust and setting these organizational structures in place isn't rocket science. But resistance to them, brought about by the natural conflict between software quality and development expediency, is real.

Software quality can become a reality. All it takes is a little sweat, some sane politicking and a new measure of discipline in our development environments.

Being the engineers and artists that we are, the desire for quality is inherent, and our customers certainly value it.

Wright is a data administrator at the Christian Broadcasting Network in Virginia Beach, Va. He can be reached at david.wright@cbn.org.

ActiveWeb middleware links apps and browsers

By Craig Stedman

Active Software, Inc. has introduced a package of middleware and development tools for linking Web browsers to corporate databases and applications.

ActiveWeb is part of a new breed of Internet-oriented products that combine transaction-based middleware and snap-together development environments. These products are starting to emerge from the labs of neophyte vendors such as Active, a start-up firm in Mountain View, Calif.

Bare-bones connection

The ActiveWeb technology includes software adapters that can automatically map and translate data passing from back-end servers to browsers and then back again.

That minimizes the amount of programming needed to connect Internet or intranet users to a jumble of corporate systems, said Julius Salud, senior director of business operations at Autodesk, Inc. in San Rafael, Calif.

"We're essentially using it as an information broker to hook the Web into our systems without having to spend a lot of money to create the interfaces," Salud said.

Autodesk, a maker of design automation software, is developing an ActiveWeb-based application that will let its dealers place orders, validate serial numbers and track account balances via the Internet.

Active matrix

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Pricing
$4,995 for first license, $2,495 for each additional license (development suite)
$5,000 per server (Information Broker middleware)
$3,000 for each database adapter

Availability
Early August

ActiveWeb follows on the heels of OpenScape, a similar product announced earlier this year by OneWave, Inc. (formerly Business@Web) in Watertown, Mass.

But ActiveWeb embraces the Internet even more tightly than OpenScape, said Evan Quinn, an analyst at International Data Corp. in Framingham, Mass.

For example, ActiveWeb's user interface builder and built-in administration tools are written in Sun Microsystems, Inc.'s Java language and can be run from a browser, freeing information systems employees to work away from their desktops. By comparison, OpenScape uses a more conventional Microsoft Corp. Visual Basic-compatible approach to development, Quinn said.

ActiveWeb and OpenScape provide asynchronous queue-based communications among systems, similar to general-purpose messaging middleware.

But the products offer a higher level of integration with development tools and use "publish and subscribe" technology, which can trigger a series of processing steps in response to specified events.

That was one of the key capabilities that sold Pacific Telesis Enterprises on ActiveWeb, said Joe Hocker, internal Web manager at the Pacific Telesis Group unit in San Ramon, Calif.

Hocker is developing an ActiveWeb online call center application that will be able to forward alerts on network outages and other problems directly into the browsers of Pacific Bell customer service representatives.

New Products

IQ Software Corp. has announced IQ/Vision 4.0, a database analysis tool.

According to the Atlanta company, IQ/Vision 4.0 is a decision-support tool with a full range of query/reporting and online analytical processing (OLAP) capabilities. It features automated database loading and supports relational OLAP and multidimensional databases.

Pricing for IQ/Visioo starts at $20,000.

▶ *IQ Software*
(770) 446-8880
www.iqsc.com

AllMicro, Inc. has rolled out The Troubleshooter 5.0, a PC diagnostic program.

According to the Clearwater, Fla., company, The Troubleshooter 5.0 gives users complete systems information and works on any PC with an Intel Corp. or compatible processor and with any operating system. It was designed to comprehensively test the CPUs, math coprocessors, RAM, cache memory, hard disk drives, floppy disk drives, CD-ROM drives, sound cards and parallel/serial ports.

The program costs $399.

▶ *AllMicro*
(813) 539-7283
www.allmicro.com

Pilot Software, Inc. has announced Discover Server, the data mining component of Pilot's Decision-Support Suite.

According to the Cambridge, Mass., firm, Discover Server integrates with data warehouses to deliver highly visual predictive modeling results. It features interactive online analytical processing tools.

Pricing starts at $100,000 and includes anftware, training and consolting.

▶ *Pilot Software*
(617) 374-9400
www.pilotsw.com

Bac-Tech Systems, Inc. has announced VisionEDI, electronic data interchange (EDI) software.

According to the New York firm, VisionEDI uses browsers to facilitate the mapping of data from an end user to trading partners by converting ANSI X.12 codes.

VisionEDI includes three transaction sets: purchase orders, invoices and functional acknowledgements. It costs $4,995.

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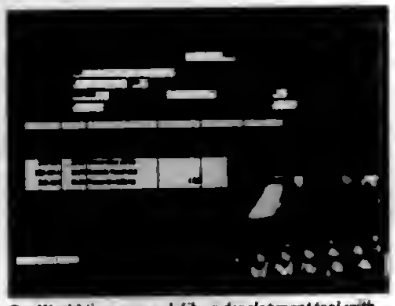
OneWorld eases move to client/server

By Thomas Hoffman
NEW YORK

J. D. Edwards & Co. has made an architectural leap past SAP AG with flexible, object-oriented versions of its OneWorld manufacturing and logistics software, users and analysts said.

The goal is to make it easier for the vendor's predominantly IBM AS/400 customers to migrate to client/server architectures.



OneWorld *'is very much like a development tool with a meta data repository,' one analyst says*

This will be done by letting users share data among legacy systems and OneWorld's distributed applications.

Observers applauded OneWorld, announced late last month, more for its architectural flexibility than its new application features.

OneWorld "allows you to very easily modify the applications in real time," said Anthony Picardi, an analyst at International Data Corp. in Framingham, Mass. In that sense, "it is very much like a development tool with a meta data repository," he added.

SAP's tightly integrated R/3 software was notorious for being inflexible, which led the German company to announce plans to unbundle the applications [CW, June 17].

Even with the unbundling of R/3, industry analysts said J. D. Edwards' configurable network computing architecture still puts the company ahead on the flexibility front. SAP offers its R/2 customers programming tools that help them migrate to the vendor's R/3 platform. But it doesn't have a database that provides a cohesive coexistence path.

Compatibility

Coexistence between the predecessor World software and client/server OneWorld "is real nice because we can make journal entries and payments in OneWorld and bring it up on World screens," said beta tester John Gornick, application development manager at Ushio America, Inc. in Cypress, Calif.

J. D. Edwards, which announced the OneWorld financial application last November, will begin shipping all of its OneWorld software Aug. 1. Pricing for OneWorld packages will range from $30,000 to more than $1 million.

Supported platforms include IBM's AS/400 and RS/6000 systems, Hewlett-Packard Co.'s HP 9000 running Unix and Digital Equipment Corp.'s Alpha servers running Microsoft Corp.'s Windows NT. An IBM System/390-based version will follow in October.

But it isn't clear how many J. D. Edwards users are ready for a full-scale plunge into objects and client/server technology.

"We want to move to client/server, but we can't move lock, stock and barrel," said Ronald Lysik, director of information systems at ABB U.S. Power Generation in Windsor, Conn.

Server-based computing

OneWorld business applications were designed to let users build data warehouses, launch queries and generate reports on their PCs without the need for a server.

Lysik said officials at ABB, which uses J. D. Edwards' legacy software, were impressed with the firm's beta test of OneWorld's financial and distribution applications. "Coexistence is a godsend for us. Client/server is full of risks, and for us to completely convert would be murder," he said. Executives at Denver-based J. D. Edwards admitted that the majority of its host-centric customers might not be ready to leap into object-based inventory management and requirements planning.

"The market has to move beyond the 'talking about it' stage" to actually using object technology, said Wilson Haddow, director of research at Input Research in Mountain View, Calif.

No more pencils, no more books

Universities give groupware another look

By Tim Ouellette

Universities are using groupware to bring the classroom and a load of services to students.

"As a higher-end tuition school, we had to differentiate ourselves," said Richard Mickool, director of user services at Babson College in Wellesley, Mass. "Students are not paying a lot of money for nice scenery."

Corporate America benefits, too. Students become familiar and comfortable with electronic collaboration. One big problem with groupware installations is the employee learning curve.

Similar to Babson, Wake Forest University in Winston-Salem, N.C., is issuing students laptops with Notes [CW, May 27]. And the University of Vermont's Business School is starting to use Microsoft Corp.'s Exchange to post presentations and start discussions about the lecture topic of the week, said programmer Joe Pawlaczyk.

Easy access

Babson uses Lotus Development Corp.'s Domino, which gives Notes servers native support for Hypertext Markup Language and Hypertext Transport Protocol Internet protocols. When students return to school in September, they will be able to access the school's college handbook from Notes clients or World Wide Web browsers.

More important, this in the handbook's Web pages will lead to various electronic forms and component applets to let students complete a lot of administrative work that used to require scrambling around campus for various signatures and pieces of paper.

This is especially important for Babson's 1,000 part-time students who are working toward receiving MBAs, Mickool said.

Babson College

With groupware, *students don't have to scramble around campus or deal with faxes to get work done*

The University of Texas at Austin uses groupware a bit differently to help its MBA students. The students, required to work on group projects even though they live in all areas of the state, use Notes discussion databases instead of the faxes they used to rely on. The discussions let students access all available information because of the full-text search capability, said Court Huber, a professor at the University of Texas.

Multipurpose sites

Babson's professors will have the option of placing syllabi, notes, presentations, exams and grades on the Web pages. These will be located alongside discussion forums where students can talk about upcoming lecture topics or projects outside of class.

Charles Osborn, an assistant professor at Babson, required students to post outlines for their class projects to a Notes discussion database for all to see.

Under pressure to impress fellow students, the quality of submissions increased, and "the motivation of the grade evaporated," Osborn said.

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PJ Matarese, Senior Analyst, Philips Semiconductors

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intel inside pentium

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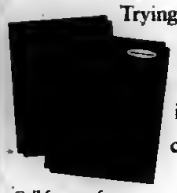

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–The Forrester Report
The Full Service Intranet, March, 1996

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–*PC WEEK*, May 13, 1996

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Fax via the Internet will save users money, 54

The Enterprise Network

HP tries openness with its OpenView

By Patrick Dryden
ST LOUIS

At the recent OpenView Forum user conference here, users said Hewlett-Packard Co. was more open about its plans for systems and network administration. But some large shops said they are still frustrated by the glacial delivery of the tools they need.

Attendees seemed "cautiously optimistic" compared with their ugly mood last year, said board member Rick Sturm, a principal at Enterprise Management Professional Services, Inc. in Boulder, Colo.

That is because HP completed the distributed version of its core network management platform in April and learned to open up to users, Sturm said. This year, HP is "more willing to step out from behind the podium" to describe its goals and disclose its advances, he said.

OpenView, page 54

Ann Sayles

TBS' Parker: *'A year ago, HP laughed at us when we wanted to report management statistics via the Web'*

A bundle for net troubleshooters

Protocol analyzer vendor's tools now work together

By Patrick Dryden

The leading vendor of protocol analyzers wants to provide more than a snapshot of network activity to help troobleshooters.

Network General Corp. last week upgraded several Unix-based tools so they can work together to manage performance and problems in distributed client/server environments.

The Network Visibility Solution Set addresses the network manager's need to track transactions from beginning to end and from client to server to fix immediate problems and monitor performance trenda.

Network management

A step forward

"That's the right direction for them to take — to bundle and integrate their separate tools," said Darrell Epps, a communications engineer at Chevron Information Technology Co. in San Ramon, Calif. "In the past, we had a problem making them all work together."

Managers in the field have increasingly asked Chevron's technology unit to explain application loads and the availability of systems and networks for their business processes. To stay on top of such service demands, "we're in the early stages of consolidating our network and systems management to find the overlaps and gaps," Epps said.

At Swiss Bank Corp., separate Network General tools helped cut network downtime by 70%, according to Bob Zamarocy, a network analyst at contractor Perot Systems Corp. in Dallas. Combining those components into one set will make troubleshooting and prevention easier, Zamarocy said.

Analysts praised Network General for going beyond bundling. For example, a common database oow blends information from Remote Monitoring (Rmon) probes and protocol analyzers so administrators can get reports about performance trends.

But Network General still must fill holes in its coverage, said Kimberly Lorencic, senior analyst at The Yankee Group in Boston. That means supporting routers other than those from market leader Cisco Systems, Inc. and server platforms other than Unix, she said.

The Menlo Park, Calif., vendor offers a starter kit for $32,000. It manages 16 segments via a Distributed Sniffer System, the unifying database and Rmon agents and console.

The kit costs $8,000 less than tools for Ethernet networks and $12,000 less than Token Ring tools.

Power tools

The following tools will be incorporated into Network Visibility Solution Set

Product	Type of tool
Distributed Sniffer	Analyzer for network/application protocols
Foundation Manager	Console for tracking Rmon probes and agents
SharpShooter	Performance monitor for Unix applications and Internet servers
Reporter for Unix	Database for logging reports from tools

ISP = Internet service problems?

Users battle poor provider performance but see no solution soon

By Gary H. Anthes
MONTREAL

Network congestioo and shutdowns by major Internet service providers are prompting users to look for ways to guarantee performance from their providers.

But for a variety of reasons, that isn't easy to do.

"Today, our provider agreement just says, 'You send us a large sum of money, and we'll be nice guys and deliver some of your [data] packets,'" complained Matt Mathis, a network engineering specialist at the Pittsburgh Supercomputing Center.

No standard

Mathis said one problem is the lack of standard Internet performance metrics and tools that would let users and providers reliably measure things such as effective bandwidth, uptime, transmission time and packet-delivery reliability. Mathis spoke at the Internet Society's annual meeting here.

He said he hopes emerging measurement tools — one of which is being developed at the supercomputer center — will some day allow him to hold his Internet access provider more accountable.

The service providers aren't likely to be keen on that idea. "Any performance metric yoo can quote, you'll regret, because eventually somebody will claim you are not meeting it," said Richard Mandelbaum, president of Nysernet, Inc., an Internet service provider in Great Neck, N.Y.

Mandelbaum said none of the major service providers guarantees levels of performance or publishes actual performance statistics. "But they all claim to provide the best service on the Internet," he said.

But as users put critical applications oo the Internet, they are beginning to demand assurances. "We would expect to receive contractual performance guarantees with any service — networking, telecommunications, Internet or whatever," said Ray Hoving, chairman of the Society for Information Management's National Data Highways Advisory Council.

Users also say they would pay premium prices for premium service, he said. Hoving is also director of corporate information technology services at Air Products and Chemicals, Inc. in Allentown, Pa.

Major 'net service providers are beginning to heed the call.

By year's end, MCI Communications Corp. will offer a premium option as part of its recently announced Concert InternetPlus service.

The option, which was intended for large multinational firms that run critical applications on the Internet, will provide guaranteed bandwidth or pay customers refunds.

Another problem with performance guarantees: A single provider often can't control end-to-end reliability because multiple companies handle the traffic from

Service, page 54

The Internet

Connected networks	100,000
Host computers	10 million
Countries connected	186
Users	35 million
Web servers	76,000
Annual growth in networks	85%
Annual growth in traffic	300%
Annual growth in Web servers	2,400%

Source: MCI Communications Corp., Washington; Network Wizards, Menlo Park, Calif.

Fax via 'net can save money

By Stewart Deck

Imagine sending a fax to Paris or Singapore for the cost of a piece of bubble gum, without hovering over a fax machine or wondering if the fax ever arrived.

NetCentric Corp. last week announced an Internet-based fax delivery service that would bring that scenario to life.

Telecom

FaxStorm is the Cambridge, Mass., company's first set of products designed to shift traditional corporate telecommunications traffic to the Internet.

Instead of using long-distance telephone lines to send faxes, FaxStorm lets users send point-to-point or broadcast faxes from a desktop application to a local Internet access provider's point of presence (POP). Then the fax is transmitted to an Internet POP in or near the destination city.

"This technology is going to revolutionize the way faxes are sent. The cost savings for international faxes will be too compelling [for companies] to disregard," said Maury Kauffman, managing partner and analyst at the Kauffman Group in Cherry Hill, N.J.

For example, the cost of sending a fax over regular phone lines is approximately 13 cents per min. across the U.S.; $1 per min. to Madrid; and a steep $2 per min. to Tokyo. NetCentric's prices range from 2 cents to 8 cents per min.

Analysts said the big challenge will be overcoming the inertia of companies that are unwilling to change the way they handle faxing.

"This makes my life much easier, especially with fax broadcasts," said beta-tester Megan Davis, a researcher at Off Wall Street Consulting in Cambridge. From her desktop, Davis can broadcast faxes to her clients, including overseas, and monitor the transmission status.

Beta-tester Mike Sawyer, a manager in the information systems department at Forrester Research, Inc. in Cambridge, said the firm sends more than 200 faxes per day and turned to FaxStorm to cut faxing costs — including the overhead of maintaining a fax server.

By subscription

At the heart of FaxStorm is NetCentric's POPserver, software that Internet service providers install at each POP to provide enhanced Internet services to subscribers.

Concentric Network Corp. in Cupertino, Calif., will be the first Internet service provider to offer FaxStorm to its subscribers.

Other users can try NetCentric's own service at www.netcentric.com. Free FaxStorm setup software is available at NetCentric's home page.

"This will become a competitive issue for service providers who are looking for any value they can add. If one offers low-cost fax service, others will have to follow suit," Kauffman said. Eventually, NetCentric will be able to "cover 95% of the domestic market" with POP servers, he predicted.

Faxing up a storm

NetCentric's FaxStorm pricing levels

$9.95	Up to 125 min. of point-to-point U.S. domestic faxing
$19.95	Up to 1,000 min. of point-to-point U.S. domestic faxing
$59.95	Up to 1,000 min. of U.S. domestic broadcast faxing

Nothing but net

Bob Wallace

Their products can seem dull, *but some vendors are trying to spice up their pitch with funny product art. It must be the need for speed that has this Cray box blazing down Main Street.*

The internetworking industry isn't always the most amusing place to be, but here are some items that need to be addressed:

A call for color

Vendor executives are just too starched and lifeless, which means their conference keynotes are unbearably dry. For most of them, faking a David Letterman Top 10 list is an out-of-control stage routine. Wouldn't an infusion of real comedy help? Maybe *Seinfeld's* Kramer could try to deliver a speech on networking trends, or Dennis Miller could take on the Internet.

Proud parents

What would a vendor briefing be without a product manager proudly unwrapping a hub, switch or router, or bragging about an award? If you've seen one box, then you've pretty much seen them all. And it's hard to find a staple remover, let alone a wide-area network switch, that hasn't won something.

Access please

Given the flood of problems users have been experiencing getting access to the Internet, one reader suggested that ISP stands for Intermittent Service Provider. The information superhighway needs a ton of work.

The calm before the storm?

July is usually a fairly quiet month in the high-tech industry, but that hasn't held true for the internetworking industry. In July 1994, SynOptics Communications, Inc. announced plans to merge with Wellfleet Communications, Inc. Last July, 3Com Corp. detailed plans to merge with Chipcom Corp. Do we dare take a vacation?

Fair enough?

Maybe taking a page from professional sports and instituting a draft for college networking talent would help even the lopsided playing field in the internetworking industry. It seems the big get bigger while the smaller vendors are left picking for scraps — unless they're acquired.

Wallace is *Computerworld*'s senior editor, internetworking.

OpenView

CONTINUED FROM PAGE 53

Those goals, teased by product prototypes, include the following:

- Further integration of systems and application management with the core Network Node Manager platform.
- Versions of all OpenView products available on Windows NT as well as Unix.
- Broad support of intranets and the Internet.

Better late than never, some OpenView users said. "Over a year ago, HP couldn't see our need for these things. This is their future direction," said Scott Parker, supervisor of Unix and networking support at Turner Broadcasting System, Inc. in Atlanta.

Do it yourself

Parker's group built a multivendor management system to watch networks, systems and applications — and even allow users to check conditions via the World Wide Web.

"We don't consider ourselves leading edge. We're just trying to keep ahead of demands from our users," Parker said.

Explanations of the new distributed version of Network Node Manager confirmed that "we won't get everything we need or expect," said Dave Karthauser, senior technology analyst for automation development at Sprint Corp. in Westwood, Kan.

Central management servers can't handle the database for a very large network, and the processes of polling devices in distant regions and running remote console sessions sap bandwidth needed for business applications.

NT support coming

Users said they hope to get a less-expensive management console for remote domains. The Windows NT version of Network Node Manager, promised at last year's conference and previewed last week, should be ready this fall, HP officials said.

"NT already is our main platform, so it's very important that HP support it soon," said Russ Jansch, senior systems officer for field support operations at Citicorp Global Information Network in Hauppauge, N.Y. But after seeing last week's preview, some users were concerned that the upcoming version would lack the power to handle more than a small domain.

HP offered unsupported tools to build a browser interface for read-only access to reports via the Internet or an intranet, and showed a Java applet that would let managers access a full-function network map from a browser. But HP didn't promise products or support for interactive Java tools.

HP officials defended their conservative product rollouts. They said they needed to move prudently out of respect for HP's large installed base of users and roster of vendor partners.

Service

CONTINUED FROM PAGE 53

one user to another. An important exception would be companies that use the Internet for a private intranet between regional offices, said Scott Bradner, a network specialist at Harvard University and co-director of the Internet Engineering Task Force's Operational Requirements Area, which also met here recently.

For enterprise intranets, Bradner advised users to contract with one national service provider, rather than several smaller regional providers. Users should demand service guarantees for traffic that moves among their offices, he said. Like it or not, the major service providers may have to submit to third-party performance audits, Mandelbaum said. He said the Automotive Network Exchange — a consortium of automobile companies that promotes electronic commerce with suppliers — seeks ways to certify providers. Suppliers that want to do business with an auto company over the 'net would be required to use a certified provider to offer high service levels.

You know where

you're going.

New Products

Industrial Computer Source has announced a series of stand-alone Ethernet 48V hubs.

According to the San Diego company, the 30xx-48V Series provides 12 or 24 RJ-45 ports, an optional bonus port and stackability for up to 20 units in a standard 19-in. rack. A Simple Network Management Protocol agent may be implemented through an embedded board that mounts inside the hub or as an agent box that connects to the stack.

Repeater and bridge port modules are also available.

Pricing for the hubs starts at $1,045 for the 12-port model.

▶ *Industrial Computer Source*
(619) 677-0877

Tripp Lite, a division of Tripp Manufacturing Co., has announced PowerAlert Plus, network management software.

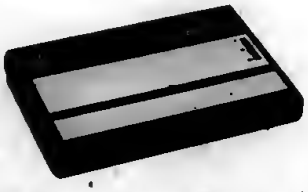
According to the Chicago firm, PowerAlert Plus works with Tripp Lite's SmartPro uninterruptible power supply (UPS) series to measure and display power parameters, including maximum and minimum line input voltage and line frequency, from any workstation or server.

All events are forwarded to a log that records disturbances and alarms. PowerAlert Plus also monitors and displays UPS battery power, percentage of the UPS load and internal UPS temperature.

PowerAlert Plus is available on CD-ROM for $89.

▶ *Tripp Lite*
(312) 755-5400
tripplite.com

Rad Network Devices, Inc. has announced VAN-XS, an Ethernet branch office router access node.



VAN-XS router access node *lets users mix and match WAN services*

According to the Costa Mesa, Calif., company, VAN-XS lets users mix and match any combination of wide-area network services, including Integrated Services Digital Network (ISDN), X.25, frame-relay dial-up and leased lines.

It has one Ethernet LAN port and two WAN interfaces that support speeds from 9.6K to 384K bit/sec.

Each WAN port can be used as a main or backup connection with any combination of integrated ISDN, X.25 or standard interfaces.

Pricing starts at $1,595.

▶ *Rad Network Devices*
(714) 436-9700
www.rnd-home.com

General Technology, Inc. has introduced the HubMaster II and HubMaster IIe, stackable/chassis hubs.

According to the Melbourne, Fla., company, HubMaster II is a Token Ring hub that is field-configurable with hot-swappable fiber and shielded modules for ring and lobe slots.

HubMaster IIe is a configurable Ethernet hub. Both models contain an embedded Simple Network Management Protocol agent for network management.

Each hub supports a combination of modules to suit the media. Pricing for HubMaster II starts at $3,299. Pricing for HubMaster IIe starts at $1,448.

▶ *General Technology*
(407) 242-2733

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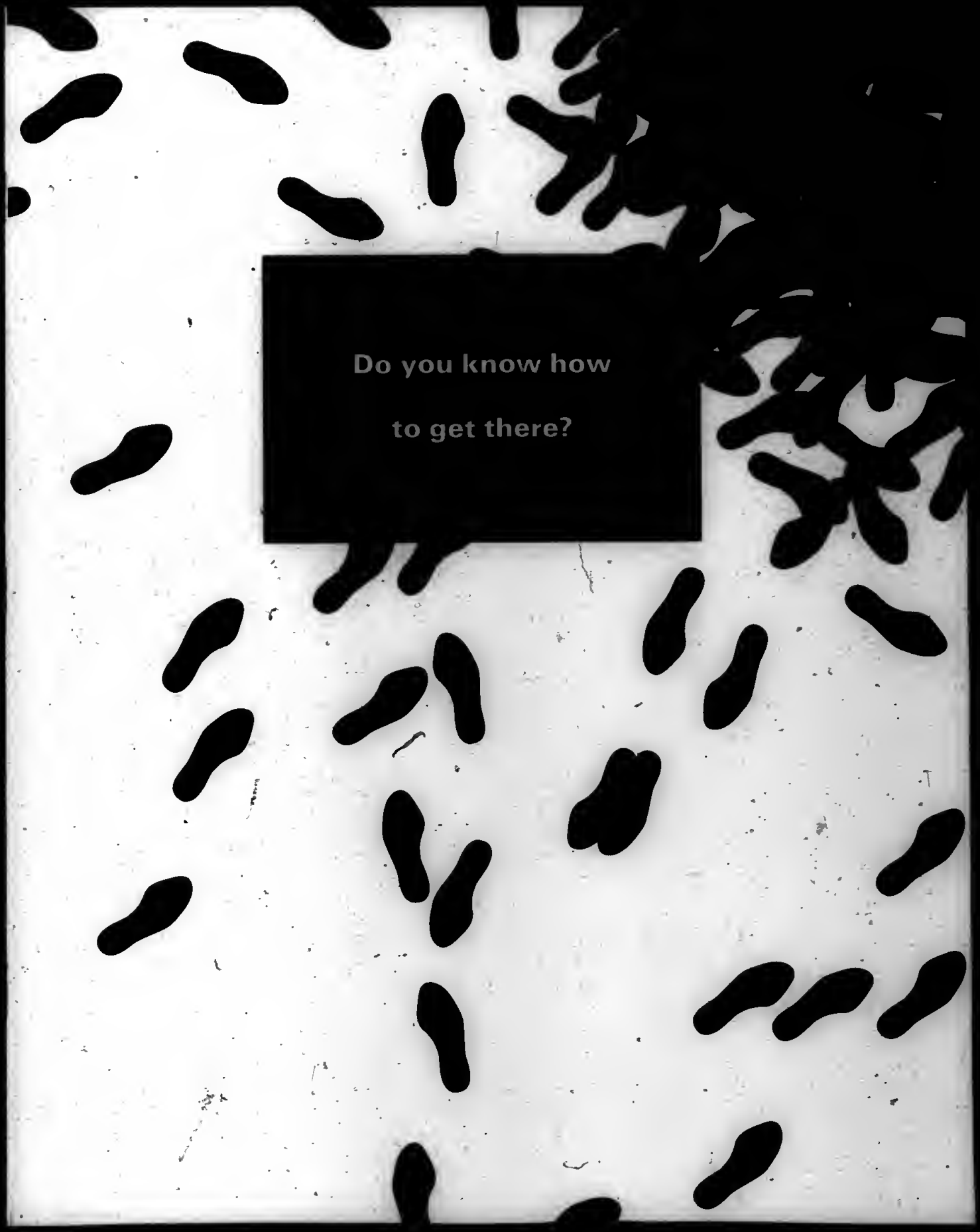
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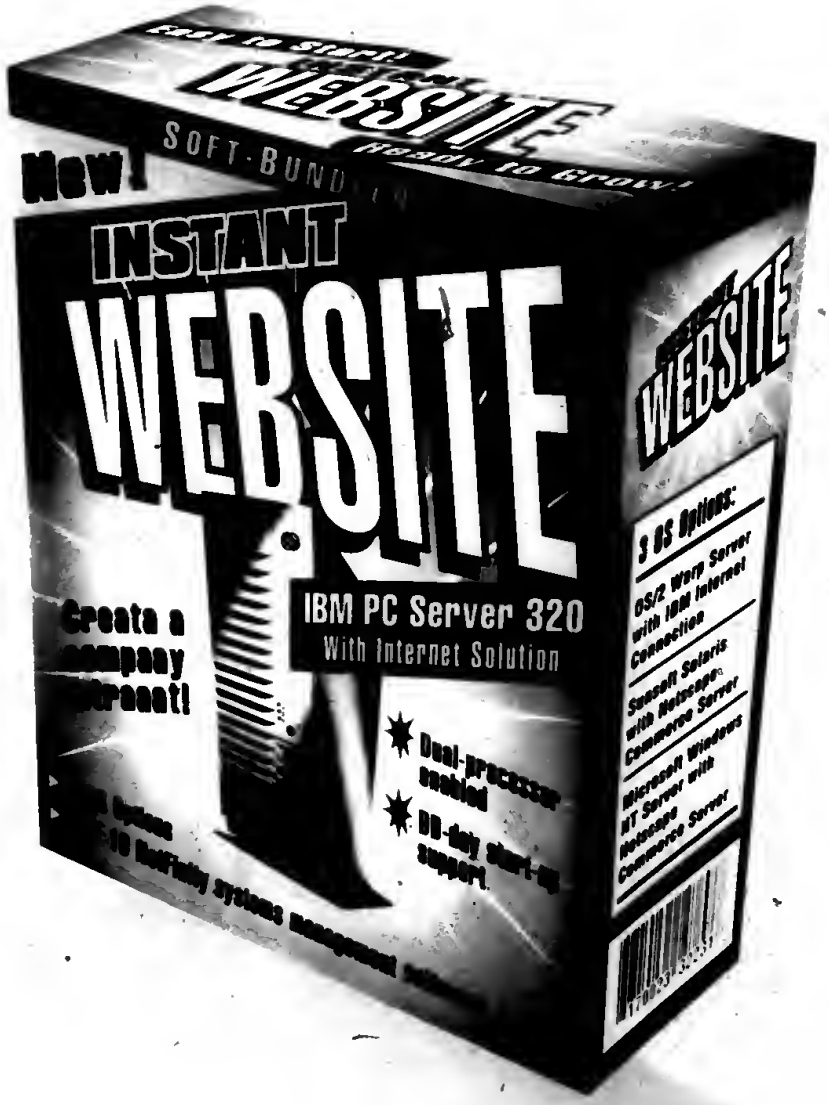

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The Internet

http:

Online job searches

World Wide Web sites for job hunters, employers and recruiters abound, but several new pages offer some interesting draws for the career-minded. Here are a few new sites to peruse.

- CareerSite, at www.careersite.com, lets job seekers enter search criteria, such as location, skills or type of company. A software agent then matches those items with job openings and sends potential opportunities back to the job candidate via electronic mail.

- The Software Jobs Home Page specializes in, you guessed it, software. The site, which is at www.softwarejobs.com, includes a weekly newsletter for information systems people who specialize in working on SAP AG client/server applications.

Of course, employers themselves often reserve space at their own Web sites to post jobs and accept resumes. McDonnell Douglas' Houston division recently advertised for C and C++ programmers who know Sun Microsystems, Inc.'s Solaris operating system. It's worth it to check out the home pages of places at which you might want to work.

- WorldBase, at www.worldbaseinc.com, recently introduced HR/Thunder, a site where recruiters can go to expedite their hunts for qualified candidates. Potential workers can send resumes via E-mail, and recruiters can search for key words in the resumes.

- If you're more the in-person type, point your browser to Career Expo Job Fairs at www.careerex.com. There you will find a list of upcoming job fairs across the country. Huntsville, Ala., Denver, Columbus, Ohio, and Albuquerque, N.M., are among the locales on this summer's agenda.

— Kim S. Nash

Domino II in play

By Tim Ouellette

Lotus is hoping to play the right Dominoes in its Internet strategy for Notes.

Lotus Development Corp. announced Domino II at the recent PC Expo. The product plan builds on Domino, Lotus' Notes server that natively supports Hypertext Transport Protocol (HTTP) and Hypertext Markup Language.

Domino II will be purely an Internet player, with server processes that support only Internet standards for electronic mail, directories and transport. Users who run standards-based intranets can access the Notes features they want — such as security, indexing and replication — without buying in to the whole Notes architecture.

"If Lotus wasn't opening up Notes and integrating its services with the World Wide Web, they would really have a proprietary tag stuck to the product," said Gary Rowe, a principal at Rapport Communications, Inc. in Atlanta. Users seek to stan-

Domino, *page 66*

CW.Internaut

Profile: Alexandra Fisher

You don't find many webmasters as valuable as Alex Fisher.

She is a marketer with two degrees — English/art and computer [illegible] and a lot of brainpower.

"When I started working at a high-tech company, I thought [illegible] esting people were the developers. I wanted to communicate [illegible] said, explaining what prompted her in 1989 to enter Harvard [illegible] school to study Unix programming. At the time, she [illegible] department at Integrated Computer Solutions, Inc., a [illegible] ment company in Cambridge, Mass.

Webmaster
net.Genesis Corp.
Cambridge, Mass.
www.netgen.com

But most of [illegible] learned about [illegible] gleaned from [illegible] started, there [illegible] could take, and [illegible] way to teach [illegible] self," she said.

Fisher, who d[illegible] pertext Markup Language programming for Net.Genesis' [illegible] it. The company's end users, corporate partners and [illegible] ent "hangouts" at the site where they find information [illegible] them.

"It's the webmaster's job to guide people th[illegible] experience of a site."

Fisher draws thick boundaries between the domains of intranet and Internet webmasters. That is, external Web sites should be managed by marketers, while intranets are the realm of information systems workers who know internal systems intimately, she said.

"The IS guy has a big advantage over someone like me when it comes to building a good intranet," she said. He knows databases, middleware and other complex stuff that Fisher doesn't want to touch, she said.

In her off-hours, Fisher doesn't log on. "People are surprised, if they are in my house, to find out what I do at work," she said. There is no visible PC there.

— Kim S. Nash

Net.Genesis' resident webmaster enjoys ice skating as well as 'net surfing

IF YOU'RE RUNNING AN INTRANET WITHOUT LOTUS NOTES, YOU'RE BARELY SCRATCHING THE SURFACE.

Intranets are a great tool for sharing information. To get the most out of them, look to Lotus Notes. With Notes, you can now build intranet applications using the latest Internet technologies. And with the new interactive Web application server, code-named Domino, you can run them with standard Web browsers. Over 12,000 Lotus business partners can help you build and deploy applications that transform your intranet from a static publishing vehicle into an interactive environment for business collaboration. Notes' state-of-the-art replication gets the latest information to the people who need it. And with Notes' RSA Data Security, only those who need it.

For more information on how Lotus can help you manage the cost of your intranet, explore Lotus on the World Wide Web at www.lotus.com or call 1 800 828-7086, ext. C162

With Notes's gateway technology, protocols and standards such as HTML 3.0, [illegible], SSL, [illegible], SNMP, and [illegible], SMTP. And with ActiveX, Java and Netscape Plug-in API support, all the Web applications you're developing today will automatically work with Notes.

COMPARING INTRANET COSTS**

	Notes	Microsoft	Netscape
Server Price	$495	$5,773	$3,680
Client Price	$55	$93	$135

** For equivalent functionality as per Microsoft and Netscape Web sites 6/7/96. Visit www.lotus.com for more information.

More important, Notes does all this at a fraction of the cost of alternative products from Microsoft and Netscape.

Take a closer look at a Notes-powered intranet. It'll open your eyes.

Lotus
Working Together®

Corel's Web.Designer a winner

Design tool boasts snappy performance

By Ted Vegvari

Until now, the best WYSIWYG publishing tools for Hypertext Markup Language (HTML) designers and publishers have been available on the Apple Computer, Inc. Macintosh.

But with rich graphical user interfaces for Windows platforms catching up, many "Apple first" developers are now building their new "what-you-see-is-what-you-get" products for Windows 95 first and, in some case, exclusively.

PRODUCT REVIEW

The result is products such as Web.Designer from Corel Corp. in Ottawa.

Having designed more than 1,000 World Wide Web pages the hard way, our staff found that Web.Designer exceeded our expectations with its ability to address key elements for Web page design.

These include ease of installation, ease of use when creating Web pages, support for the most commonly used and popular HTML features, the ability to work with existing Web pages and overall stability.

Installation

We installed Web.Designer in an acceptable 14 minutes using a four-speed CD-ROM drive and the default setup option, which requires approximately 12M bytes of disk space.

After launching the Web Designer application, we were presented with what appeared to be a standard dialog box in Corel applications. "Start a new Web page," "Open an existing Web page" or "Choose a template to begin a Web page." We closed that dialog so that we could become familiar with the main screen.

The default interface and menu layout can be customized. In fact, they are almost identical to that of Microsoft's Word for Windows. That is a quantifiable advantage that reduces the learning curve for users. Menu options were easy to recognize and featured the most frequently used HTML layout commands such as Insert Image, Bold, Italic and Link Image.

We tested Web.Designer with the help of an inexperienced user who wanted to create a newsletter from an existing publication, including a logo. The user had no knowledge of Web page design applications but did have experience with Word for Windows and Corel's WordPerfect.

A newsletter of acceptable quality was completed in 20 minutes using the copy and paste commands between Word and Web.Designer and the formatting commands available on the Web Designer tool bar. Our user had to turn to the help option a reasonable three times. Usability gets a high score.

Performance

We created a 60-page document (146K-byte file size) from an existing text file and had no performance problems. Adding 30 graphic images of 15K bytes each slowed screen refreshes only slightly.

One notable feature is the short tool bar at the top left. This bar will launch CorelWeb Move, CorelWeb Draw, CorelWeb World, CorelWeb Gallery and CorelWeb Transit, a suite of applications specially integrated with Web.Designer.

In our beta copy of Web.Designer Suite, not all options were fully functional. Therefore we focused our review mainly on Web.Designer and slightly on CorelWeb Transit.

Corel Web Designer for Windows

TEST CONFIGURATION

Hardware: Compaq ProLinea MT 4/66 with 16M bytes of RAM

Overall grade: A

Operating sytem: Windows 95

Importing data

Transit is potentially one of the most valuable programs included in the Web.Designer Suite. We tested and confirmed its ability to perform the bulk of conversion work by importing a wide variety of word processor file formats, including an existing 60-page Rich Text Format and Word file format document.

Indexes were converted and created on the fly, and the links were clearly and logically built. That allowed us to make changes quickly and easily.

Creating a test page

In creating a new Web page, we began with text from an advertisement, added eight scanned pictures and a logo and created a layout.

We then inserted several sections of text information within tables.

The Table setup menu has features we use in most of our Web pages. We inserted text and graphics; both linked and unlinked, without problems. It is hard to screw up a table with this program.

We estimated our time savings at 50%, compared with using standard text-based HTML editors and performing some of the coding by hand. This reduced our "time to market" and enabled us to provide more efficient and, possibly, superior service to our client.

On the downside, Web.Designer doesn't let users drag an image or element around on the screen. In addition, there are several features we would like to see in the next cut.

Those include the ability to "browse and view" tiled background images; a menu option or utility to create smooth-tiled backgrounds from scratch or from any image, and to visually test transparent background selections; and the ability to copy and paste data from charts and spreadsheets into Web.Designer.

Vegvari is a principal at Computer People Resources/PC Labs in Torrance, Calif. He can be reached at tedv@pclab.com

New Products

Maximizer Technologies, Inc. has announced MultiActive Maximizer 3.0IS for Windows 95, an Internet contact manager.

According to the Vancouver, British Columbia, company, MultiActive Maximizer 3.0IS lets users access, search and download contact information on up to 10 million U.S. businesses directly into Maximizer via the Internet.

Maximizer 3.0IS links users to a MultiActive Data, Inc. Eagle online searchable database with current, detailed business data.

MultiActive Maximizer 3.0IS for Windows 95 costs $149.

▶ *Maximizer Technologies*
(604) 736-9666
www.maximizer.com

DataViz, Inc. has announced Web Buddy, an Internet utility collection.

According to the Trumbull, Conn., company, Web Buddy assists Web browser users in collecting, converting, organizing and sharing information they find on the Web. It automates the collection of Web pages or complete Web sites, downloading the sites to a user's hard drive at a specified collection time. It then lets users browse this information later off-line.

Web Buddy includes a central filing area with tool bars and folders where collected pages, sites, graphics and bookmarks are stored and organized.

Pricing for Web Buddy will be announced later in the summer.

▶ *DataViz*
(203) 268-0030
www.dataviz.com

Virtus Corp. has announced 3-D Website Builder.

According to the Cary, N.C., company, 3-D Website Builder is a cross-platform product that lets users create drag-and-drop three-dimensional Virtual Reality Modeling Language (VRML) worlds on the Internet.

It includes a drag-and-drop graphical interface and a multiplatform CD that contains separate versions for Microsoft Corp.'s Windows 95 and Windows 3.1 and Apple Computer, Inc.'s Power Macintosh and Macintosh.

3-D Website Builder includes a cross-platform VRML browser. It supports the VRML standard, including shading, in-line objects, textures and levels of detail.

Pricing for 3-D Website Builder starts at $99.

▶ *Virtus*
(919) 467-9700
www.virtus.com

Thuridion has introduced Crew, a suite of Internet groupware products.

According to the Scotts Valley, Calif., company, Crew lets businesses and individuals share and manipulate schedules, card files, documents and communications over the Internet and through internal networks.

The Crew suite includes a calendar, card file, administrative tool, universal in-box for consolidating and viewing messages, and an application for file transfers and information sharing. Crew's architecture was designed to be scalable through a SQL database connectivity.

Pricing for Crew starts at $75 per user.

▶ *Thuridion*
(408) 439-9800
www.thuridion.com

Mustang Software, Inc. has announced Wildcat Interactive Net Server.

According to the Bakersfield, Calif., company, the product provides a full-feature online system for businesses and an intranet or World Wide Web server. It lets users interact on-site using electronic mail. It also lets users post and read messages in personalized conferences, search and upload files from customizable file libraries and send instant pages to other users on-site.

The server is also available in an Enterprise Edition. This model can handle 64 concurrent sessions and can receive and reply to any messaging on the Web Server directly from any intranet to desktop using Microsoft Corp.'s Exchange Inbox.

Pricing starts at $1,495. Pricing for The Enterprise Edition model starts at $3,995.

▶ *Mustang Software*
(805) 873-2500
www.mustang.com

Amati Communications Corp. has announced Overture 8 ADSL/DMT, a modem for Internet access.

According to the Mountain View, Calif., company, the modem enables Internet access at data rates as high as 8M bit/sec. downstream and 640K bit/sec. upstream. It provides high-speed data transmission over standard phone lines and permits voice traffic on the same connection. It has direct Ethernet connectivity using 10Base-T to the subscriber and the central office units.

In operation, Overture 8 ADSL/DMT will attempt connection at the maximum rate first. If the line condition does not permit this bandwidth, the unit will re-establish a connection at a lower data transmission rate.

Pricing starts at $2,500 per line.

▶ *Amati Communications*
(415) 903-2350
www.amati.com

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Domino

CONTINUED FROM PAGE 61

dardize as much as possible and maintain some of the strong features found in traditionally proprietary products such as Notes, he said.

Lotus already lets Web users access Notes through the Domino HTTP server, but the full range of Notes features aren't accessible through HTTP — the Internet protocol lacks some necessary features of Notes' proprietary protocols, Lotus officials said.

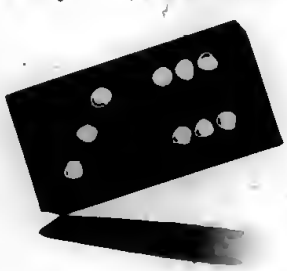
Another view

The Cambridge, Mass., firm also will expose the Notes object store through the Internet Intra-Orb Protocol (IIOP), the Internet version of the Common Object Request Broker Architecture standard.

With the object store, management becomes less of a problem for users.

"Now it could be possible to supply one infrastructure that supports both [Post Office Protocol-3] and Notes, for example," said Tim M. Craford, a senior analyst at National Semiconductor Corp. in Santa Clara, Calif. End users still get the services they want, but administrators get a simpler environment, he said.

But just how Lotus will provide these services hasn't been decided, said Andrew Mabon, manager of Internet marketing at Lotus. Lotus could offer Internet E-mail and directory servers, newsreader servers or



IIOP-based servers to access the Notes object store via the various Internet protocols.

"Part of the real test [for Domino II] will be how exactly these products are implemented," Rowe said.

Domino II products will be a subset of Notes 5.0, which will support Internet standards, IPX and the other protocols Notes has always provided.

Pure Web clients are also on the Domino II slate. These include an interactive application designer and a mobile Web information manager.

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Carrie Gaykowski
Senior Director
Marketing/Communications Services
The Martha Felt Group

For more information, please contact Carolyn Medeiros, Publishing Services Director, Boston 1-800-343-6474

Briefs

Neon has Shadow

MVS sites can let users access data from the World Wide Web with Shadow Web Server from Neon Systems, Inc. in Sugar Land, Texas. Announced at the International DB2 Users' Group in Dallas, Shadow Web Server requires no changes to applications and no coding, Neon officials said. Available immediately, it sells for $48,000 per CPU.

Shockwave strikes

Macromedia, Inc.'s Shockwave will be integrated into Microsoft Corp.'s ActiveX and the next release of Windows 95 Internet Explorer. Shockwave will be the first ActiveX control that Microsoft packages with Internet Explorer. Macromedia will support ActiveX and Internet Explorer within Shockwave and the Backstage Designer Web authoring tool.

Tool kit online

IBM has posted a prototype tool kit of a promised Internet gateway for its MQSeries messaging middleware on the Web page (www.hursley.ibm.com) for its software lab in Hursley, England. Tool kits that support both OS/2 and AIX are available for downloading. The full gateway, which will let Web browsers use MQSeries to get data from back-end servers, is scheduled to ship late this year or early next year, IBM executives said.

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The magic bits involve a new interactive Web application server, code-named Domino, from Lotus Development Corporation, an IBM company. And you can get the whole story about how it "extends mission-critical applications to the open environment of Internet standards and protocols," etc, etc, at http://domino.lotus.com.

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One more thing. Any connection between this Lotus development and IBM's commitment to making network computing real for customers is strictly intentional. For an overview of other surprising ways we can help you make the most of a networked world, stop by our Web site at http://www.ibm.com.

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TCP/IP frame-relay network puts Greyhound in fast lane, 75

Corporate Strategies

GM Access revs up

By Laura DiDio

This is one company's tale of two networks.

Big Three automaker General Motors Corp. was a longtime, satisfied Novell, Inc. NetWare user. For years, GM with great success used NetWare and Novell Directory Services (NDS) as the lead network operating system platform in its centralized corporate administrative networks in Detroit.

But recently, former GM subsidiary Electronic Data Systems Corp. (EDS) chose Novell rival Microsoft Corp.'s Windows NT Server as the linchpin of a program to link the automaker's 8,500 car dealerships nationwide.

The main objective of the GM Access Program is to distribute data about the availability of new cars quickly to GM's car dealerships via a satellite network. The satellite network, which will be rolled out over the next year, will replace the current outdated X.25 network, which takes hours to download information.

Dealerships give it a spin

The GM Access Program is being beta-tested at 14 car dealerships. It will allow dealers to access inventory data that is no more than 24 hours old, read service manuals and technical bulletins, and get recall notices and parts availability information.

It will also let dealers use an online search engine to find individual models or configurations. This information will be downloaded "within 14 seconds to the dealerships to increase efficiency and get consumers the most up-to-date information," said Wayne Stein, project manager for GM Access.

"It gives me immediate and timely access to the data I need to run my business and lets me better manage my inventory levels," said Paul Soares, general manager and

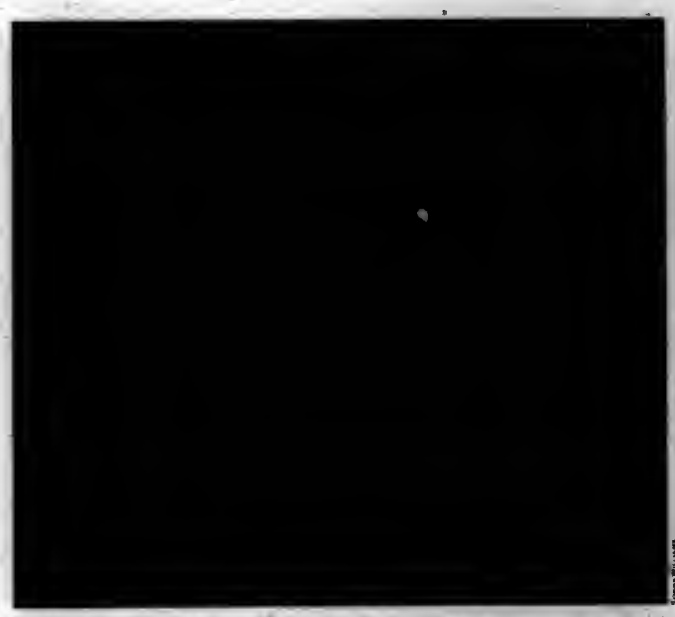
GM Access, *page 70*

Benefits of Windows NT Server-based GM Access Program

- Better customer service and response time
- Dealers get up-to-the-minute information on auto pricing and availability
- Prospec – a graphic tool to assist salespeople with the selling process for parts, specifications, price and colors
- A Common Vehicle Locator search tool that lets dealers determine the availability of a specific vehicle at other dealerships around the country

Georgia Tech's campus network goes for the gold

By Mindy Blodgett



Sidney Williams

Georgia Tech's *Ed Coleman (left), director of operations and engineering in the IT office, and John Mullin, senior administrator of planning and programs in the IT office, say FutureNet gives students a high-speed 10M-byte connection from each dorm room. Professors can also use improvements to the campus cable television system to tune in to a simulcast from another event on campus.*

As the site of the Atlanta Olympic Village — the home of the athletes — the Georgia Institute of Technology in Atlanta has some hectic days ahead this summer.

But the excitement doesn't stop when the Olympians go home at the end of July.

Georgia Tech has used the opportunity created by the Olympics to upgrade and expand its campus network. As part of a multimillion-dollar project called FutureNet, the school will come away with one of the most technologically advanced campuses in the country.

"We used the Olympics as a catalyst to do a massive upgrade to our data communications infrastructure," said John Mullin, director of operations and engineering in the information technology office at Georgia Tech.

"In the short term, this upgrade supports the village. In the long term, it means advances for all our campus teaching and researching activities," he said.

Connect the dorm rooms

For example, the upgraded network gives students a high-speed 10M-byte connection from each dorm room. "All 6,000 beds will now have a network connection" to the Internet and campus sources, he said.

Classrooms have been rewired as well, and planned improvements to the campus cable television system mean that professors will be able to tune in to a simulcast from another event on campus and to download educational programs.

Georgia Tech started planning the upgrade in 1994 and completed the pre-Olympics work earlier this year. Through agreements with other Olympics sponsors, the university installed a robust fiber-optic cable network to 130 buildings on campus.

So far, the university has spent $8 million on FutureNet. The cable network cost $3 million, but the university's share was only about $500,000; the balance was paid for by in-kind donations from Olympics sponsors and discounts from BellSouth Corp., the telecommunications company that installed the network.

ATM in the works

In tandem with the fiber installation, the university has also developed an Asynchronous Transfer Mode (ATM) network for a distributed parallel computing system. The FutureNet project recently bought a high-performance shared-memory parallel system from Silicon Graphics, Inc. — the $1.5 million Power Challenge10000 with 22 processors. The system will allow researchers to run large programs across multiple machines.

Mullin said campus researchers and his department are exploring options such as adding wireless connections between buildings. He said future projects could cost between $13 million and $30 million.

In the meantime, Ed Coleman, senior administrator of planning and programs in the IT office at Georgia Tech, oversees the plans for the Olympics, including increased telecommuting of university staff for the duration of the games.

"It's been a challenge," Coleman said of the Olympics planning. "But it's good to know we're going to have some lasting benefits from this one event."

Utility builds new GUIs to improve customer service

By Thomas Hoffman

The deregulation of the utilities industry is forcing most players to take a hard look at their customer information systems (CIS) to see if revamping or replacing the legacy applications can increase their competitiveness by improving customer service.

The problem is most of these 15- to 20-year-old CIS applications are brittle and difficult to change. Plus, client/server replacement systems that enable customer service representatives to manipulate data more effectively are expensive, often costing tens of millions of dollars to purchase and install.

In a stopgap measure designed to address these challenges, The New England Electric System (NEES) has built new graphical user interfaces (GUI) for its IBM MVS-based mainframe applications.

The project, done in conjunction with Price Waterhouse LLP's Public Utilities Consulting Group, cost NEES $2 million, or 5% of the $40 million a client/server CIS system would have cost the Westboro, Mass., holding company, said Tony Pini, vice president and director of retail customer service at NEES.

"It wouldn't be prudent to spend tens of millions of dollars on a CIS system" before having a complete understanding of what the deregulated industry will look like, Pini said.

NEES' Tony Pini *says relocation processing time has been cut because customer representatives no longer have to rekey this information*

Using Sybase, Inc.'s PowerBuilder development tools, NEES and Price Waterhouse built the GUI over a 14-month period before piloting the systems last December, said Lorretta Dowdall, a principal analyst at NEES.

The GUI runs on a Digital Equipment Corp. Pentium-based PC, which some 250 NEES customer representatives have been using since January. The PCs connect to an Ethernet network running NetWare 3.11 that links to an IBM ES/9000 mainframe through an IBM SAA gateway.

The PC-based GUI, which replaced IBM 3270-type terminals, has resulted in faster training cycles for the customer representatives and added new functions to the CIS.

Customer information systems

For example, it used to take NEES' customer service representatives five to six months to be trained to use the CIS because they "literally had to memorize hundreds of green-screen transactions and call them up by memory," said Charlie Ringleben, manager of information systems at NEES' customer service group.

Now it takes representatives one week to learn the point-and-click GUI system and five weeks for trainees.

Better, stronger, faster

New capabilities have also improved the productivity of customer service representatives. Under the old system, it usually took five to six minutes to process a customer relocation by calling the customer, entering the customer's new address on one green screen, copying the information on paper and then opening up a new screen to reinsert the information.

Now, a customer's profile is condensed from seven screens into one. A customer representative can enter a new address in the GUI and click on a "move" icon that automatically updates all the customer's files. Because customer service representatives no longer have to rekey this information, relocation processing time has been slashed in half, Pini said.

David Cain, manager of business development at the Electric Power Research Institute in Palo Alto, Calif., said NEES has taken a logical approach to its CIS needs. "But the flip side of this is that they best be taking action on a plan to put the system of the future in place or else another utility is going to eat their lunch," he said.

GM Access revs its engines

CONTINUED FROM PAGE 69

senior vice president of Alden Buick Pontiac GMC in Fairhaven, Mass.

Using the old Dealer Communication System, which dated back to 1975, the dealerships were forced to take piecemeal technical downloads that took hours, and then cut and paste the messages into a cohesive format.

"It created reams of paperwork, and I had to dedicate half of one person's time to assembling the information — but no more," Soares said.

Spencer Hondros, manager of the Villa Marin Car Dealership in New York, said the Windows NT Server-based GM Access will also allow GM and its dealerships to standardize the entire ordering system. "Right now, Pontiac, Buick and GMC all submit their paperwork differently; it's an administrative nightmare," he said.

GM's decision to deploy two network operating systems rather than standardize on one, mirrors industrywide trends, said Jon Oltsik, an analyst at Forrester Research, Inc., a consulting firm in Cambridge, Mass.

Stein agreed. "NetWare excels as a file-and-print server and is strong in GM's centralized environment. But for the GM Access program, we had an entirely different set of criteria, and NT Server fit the bill," Stein said.

The project called for an application server that could serve as a large database repository. The network operating system chosen also had to be extremely easy to maintain, flexible and scalable because the dealerships generally wouldn't be employing on-site network administrators.

Network operating systems

"To get NetWare to adequately perform as an application server would have cost 25% to 30% more than NT Server. It would also have been more complex, since Novell suggested we use OS/2 Warp as the OS on top of NetWare and then also deploy Windows NT Server as an application server," Stein said.

Still, neither GM nor rival automakers Chrysler Corp. or Ford Motor Co. are abandoning NetWare. Ford, an early NetWare 4.x adopter, continues to expand its network, and Chrysler uses NetWare at its headquarters.

Joel Van Dyke, manager of Chrysler's hardware planning, said the company has installed NetWare on superservers to create an enterprisewide fault-tolerant network that uses NDS to "handle our most critical computer functions and users. And give us 100% uptime."

Compaq provides nut and bolts for system

When GM builds a car, it not only provides the engine, transmission and tires, but also standard monitoring tools for the driver — fuel gauges, temperature monitors and so on. For its largest server deal yet, Compaq Computer Corp. had to do the same for its hardware.

Compaq already had its own server management tools, the Insight Manager package. But to win the GM deal, Compaq had to tightly integrate the tools with systems management tools that were wider in scope.

These included Hewlett-Packard Co.'s OpenView and BMC Software, Inc.'s Patrol, both of which were used at GM and EDS.

Even before the deal, Compaq had added interoperability between Insight Manager and both OpenView and Patrol. The Houston-based PC company also worked with EDS and GM to tightly coordinate the 8,500 Windows NT-loaded ProSignia 300 servers into GM's customized systems management software, said Mike Clark, head of Compaq's consulting group.

"One of the items our consulting group was charged with doing is making sure our server management tools work with the enterprise systems management tools that are already out there," [illegible] said.

[illegible]

GM [illegible] for the [illegible] tools [illegible] over [illegible]

For [illegible] tion of [illegible] ment [illegible] during the project. [illegible] had the pilot project running in 14 dealerships for some time, so we proved to ourselves that it can be done," he said.

— *Bob Francis*

Briefs

Convenient deal

Minit Mart, a Bowling Green, Ky.-based convenience chain, has purchased Evanston, Ill.-based Campbell Software, Inc.'s StaffWorks labor scheduling software for its 100-plus Kentucky and Tennessee stores.

Quick exchange

Telehouse International Corporation of America in New York has unveiled its New York International Internet Exchange service, which was designed to provide fault-tolerant, high-speed services for domestic and international Internet service providers.

Internet chain

BBN Corp. and Andersen Consulting are teaming up to bring Internet technology to the electronic data interchange market. The Internet service provider and Chicago consultancy are forming a yet-to-be-named company that will act as the infrastructure and process handler for companies that do business together.

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Greyhound lets frame relay drive its network

By Kim Girard
DALLAS

Considering that Greyhound Lines, Inc. sells the majority of tickets within three hours of a trip, there is no time for terminal outages or sluggish response times — both of which used to be problems.

Those issues no longer exist, thanks to Greyhound's new TCP/IP frame-relay network. Installed during the last half of 1995, the network replaced the costly dedicated circuits and proprietary hardware of a less flexible X.25 frame-relay network.

By revamping the system, the company has reduced annual recurring costs by more than 40% and expects payback in about 18 months, said Brad Harslem, senior vice president and chief information officer at Greyhound. Frame relay, provided by AT&T Corp., has also improved network efficiency, cutting ticket printing time from 2 sec. to a half-second, he said.

Greyhound has replaced *proprietary hardware with a TCP/IP frame-relay network*

The new network is faster, supports multiple software applications and is much more reliable, according to Harslem. Frame relay can increase access speeds from 28K bit/sec. dial-up to T1 levels of 1.5M bit/sec.

With the old network, users needed multiple terminals to access applications, Harslem said. Now, only one terminal is on each user's desk for Tandem Computers, Inc., Unix and Novell, Inc. electronic-mail applications.

"Frame relay will provide much more flexibility" for future growth, said Liza Henderson, a broadband consultant at TeleChoice, Inc. in Verona, N.J. With it, users can simply change the configuration instead of the entire network.

To save money, Greyhound has hooked up 135 small to medium-size bus terminals to CompuServe, Inc.'s network. The company pays a flat $20 monthly Internet access fee per location, compared with a $200 fee for a leased line, Harslem said.

During a recent visit to a Key West, Fla., bus terminal, one of 12 small terminals beta-testing an Internet link, Harslem said he was impressed by how quickly the system displayed fare and scheduling information. "I was absolutely floored by how quick it was."

Greyhound pays $750 per month for frame-relay equipment and service at each of 153 large bus terminals and maintenance facilities. That cost includes the line on the local loop, lease of the router and frame-relay management. All ticketing information is stored on an Amdahl Corp. mainframe located at Greyhound's headquarters here.

Harslem said the network has allowed the company to spend more time planning for the future "instead of putting out fires."

Asynchronous Transfer Mode isn't in that future for Greyhound, Harslem said, unless prices drop as dramatically as those for frame relay have.

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Retail roundup
CIOs at three major chains tackle competition in the '90s. See page 80.

Managing

Baiting the Web

Illustration by Pamela Hobbs

By Robert L. Scheier

Your World Wide Web site is a hook floating on the Internet, waiting for potential customers to come and bite. But how do you turn idle hits into big catches? Here are some tips from pioneers who are already trolling the Web.

WORDS FROM THE WEB-WISE

- Spend your time creating good content, not fancy graphics.
- If you already have bait in the form of good content, the Web can be a highly cost-effective way to hook leads. The going gets tougher if you have to create content or aren't sure what customers want to see.
- Install back-end systems that can handle the quality leads that Web sites usually generate.
- Don't overload pages with too much information.
- Don't drive off customers by asking for their names too soon.
- Design your home page so popular search engines will find the key words you want to highlight.

"We have a higher profit margin over the Internet [because] you've eliminated the local competition."
— Elliott Rabin, president

Ridout Plastics, plastics manufacturer, *San Diego*

1996 REVENUE: $6 million to $7 million

CONTENT: 40 to 50 pages of company and product information.

COST: Ridout pays $500 to $600 per month to rent space on an outside vendor's Web server and for Internet connection time. Company President Elliott Rabin does much of the site updating and management himself, a cost he doesn't calculate but says is insignificant.

NUMBER AND QUALITY OF LEADS: Three to four additional sales per day, reeling in an extra $5,000 to $7,000 in revenue per month. About 20% to 25% of Web leads result in sales, on which profit margins are higher than typical sales. Rabin says that is because customers seek out his site after other vendors in their area have been unable to deliver.

BACK-END INTEGRATION: Visitors enter personal information in forms that are stored in an electronic-mail program. Information is then cut and pasted in to Ridout's lead-tracking system.

WHAT'S NEXT: Ridout plans to add 200 pages of product information by the end of the year and improve integration with its customer-tracking system. It is conducting a companywide review of systems to accommodate an expected 20% revenue growth this year and is working to add audio and other multimedia capabilities to the portion of the site that hawks its skateboard line.

The page with job listings is "very dull — but that's the one page the users have really focused on."
— Phil Fernandaz, president

Cascade Technical Staffing, professional technical services agency, *Beaverton, Ore.*

1996 REVENUE: $3.5 million (estimated)

CONTENT: Four pages. One lists temporary job openings; the rest is information about Cascade and forms to capture data about applicants.

COST: $1,000 to $2,000 per year, which Cascade pays to a local contractor that created and hosts the home page. The only other cost is one to two hours per week for a Cascade employee to update the job postings and download E-mail from applicants.

NUMBER AND QUALITY OF LEADS: Five to six job hunters apply over the Web each day. Cascade places two to three temporary employees found through the Web each month, compared with the four to six found through classified ads. The applicant pool is good because Web browsers seem to make sure they're qualified before they submit their resumes, President Phil Fernandaz says. Cascade gets half as many job applicants over the Web as it does through classifieds but at only 5% of the cost of classifieds.

BACK-END INTEGRATION: Applicants send their resumes via E-Mail to the site, and a systems administrator tracks them.

WHAT'S NEXT: Cascade plans to restructure the content so readers aren't faced with so much text on each page.

"The leads are genuinely interested — they're not just people seeing the name. They really are searching for a coffee supplier. ... They know what they're talking about."
— Katy Boyd, coffee traffic and technical coordinator

Boyd Coffee Co., 500 employees, privately held maker of coffee and coffee-making equipment., *Portland, Ore.*

CONTENT: About seven pages of corporate information, plus text and photos that describe company products.

COST: Less than $5,000 for a local contractor to create and maintain the Web site. The only other cost is for a Boyd employee to keep the site fresh and either send queries via E-mail to a sales representative or rekey customer data in to a lead-tracking system.

NUMBER AND QUALITY OF LEADS: Between 50 and 100 serious leads per month. "The leads that have been generated are genuinely interested," says Katy Boyd, coffee traffic and technical coordinator. "They're not just people seeing the name."

BACK-END INTEGRATION: Limited. All requests for information are sent via E-mail to the site administrator, who decides whether to send them to a sales representative or enter them in the lead-tracking system.

WHAT'S NEXT: Company executives are considering adding price information. They've kept it off the system so far because of the difficulty in maintaining different pricing levels, such as retail vs. wholesale and quantity vs. single-unit prices.

"The biggest surprise, and probably the biggest disappointment, is that the price of anonymity is very, very high."
— Reed Taussig, president and CEO

Inquiry.com, Inc., provides technical information to customers and customer leads to vendors over the Web, *San Mateo, Calif.*

1996 REVENUE: Just less than $2 million (estimated)

CONTENT: More than 8G bytes of product and technical information from 85 vendors, plus access to 130,000 articles from trade publications and forums where users can ask questions, browse for tips and quiz experts.

COST: $1.5 million

NUMBER AND QUALITY OF LEADS: Approximately 6,500 users downloaded product information in May, but just less than 500 generated revenue for Inquiry.com. Potential customers browse for free. Vendors pay Inquiry.com only if those customers turn into quality leads by, for example, asking a salesperson to call.

BACK-END INTEGRATION: Limited. Inquiry.com now sends customer data via E-mail to vendors but hopes to build direct links to vendors' customer-tracking systems within three to four months.

WHAT'S NEXT: Inquiry.com plans promotions to encourage users to pass information to vendors. It will also add data about networking products to the site, which focuses on application development. It has also rolled out a feature that allows vendors to place their advertisements next to a relevant trade-press story even if their products weren't mentioned.

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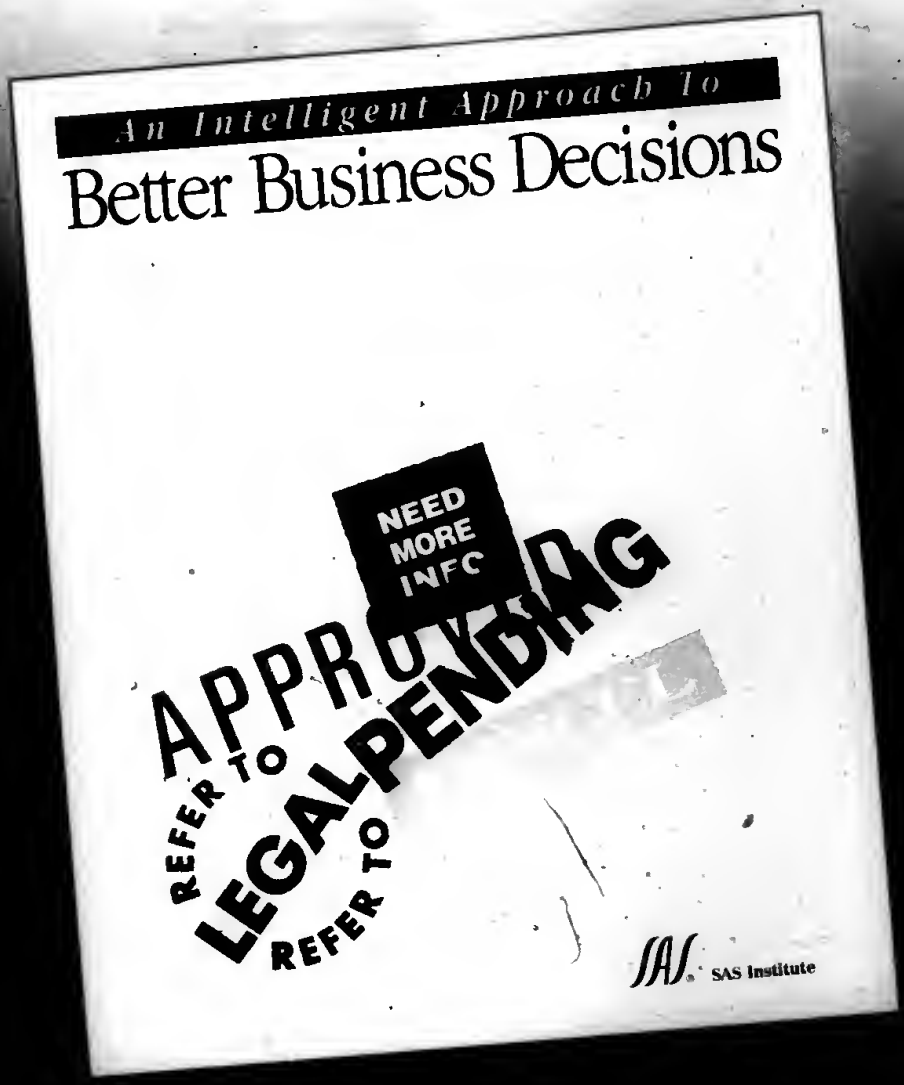

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The state of stores

COMPETITION AND PRICE-CONSCIOUS BUYERS PRESENT HEAVY CHALLENGES TO RETAIL CIOS

By Robert L. Scheier

Retail has always been a tough business. But intense competition, a glut of stores offering similar merchandise and bargain-hunting consumers are making life especially challenging this year. How are retail CIOs coping?

Seven chief information officers, whose companies account for about $250 billion in retail sales, discussed those issues at Retail Systems '96, a conference and exposition last month in Dallas.

Three of them offered the following observations on topics ranging from shopping on the Internet to staff productivity and outsourcing:

Shipping from cyberspace

How do you ship a product that's been ordered from a World Wide Web page? That's the question Ronald Mott at Wal-Mart Stores, Inc. considers when he thinks about commerce on the Web. Before big retailers conduct large-scale business over the Web, radical but cost-effective changes must be made in the way products are shipped from warehouse to customer.

Although it isn't using the Internet to track product shipments, a logistics firm, Hygrade Distribution and Delivery Systems, Inc. in South Kearny, N.J., is pointing the way. By tracking inventory and creating electronic links among furniture manufacturers, retailers and shippers, Hygrade can ship furniture directly from its warehouses to consumers' homes.

This eliminates an extra step: the cost and delay of shipping a sofa to a furniture store before it goes to the consumer. That's an approach that could be used by any merchant that does business on the Web.

Tom Higgerson, senior vice president of systems support at Hygrade, said at the conference that the system has been a success. He said Hygrade plans to expand it from the East to the West Coast within 12 to 18 months.

But the system wouldn't help Bentonville, Ark.-based Wal-Mart deliver small orders to your house.

Higgerson said the system only works profitably for big-ticket items of $300 or more.

Outsourcing: Clash of giants

It's not often that high-profile, well-respected CIOs come down squarely on opposite sides of an issue in public.

But that's what happened at the conference's roundtable session, as Sears, Roebuck and Co.'s Joseph Smialowski aggressively pushed outsourcing as a viable option, especially for larger retailers. He questioned why any organization with more than $5 million in annual revenue would run its own networks and data centers. Such functions are "electricity to us," he said, meaning they are utilities to be purchased from an outside vendor, not provided internally.

JOSEPH SMIALOWSKI, CIO at Sears, Roebuck, sees outsourcing as a viable option for IS in the retail industry. RON GRIFFIN at The Home Depot says his shop runs as lean, it delivers information services for less than half of what an outsourcer would charge.

Virtually all his peers took a much dimmer view of outsourcing. "I don't view it as a viable option," Mott said. Information technology and the business environment are changing so quickly that he wants to be able to change his IT strategy without renegotiating with outside vendors. Outsourcing means "putting someone else in control of your destiny," he said.

JOSEPH SMIALOWSKI

Ron Griffin, CIO at The Home Depot, Inc. in Atlanta, said his information systems shop runs so lean it delivers information services for less than half of what an outsourcer would charge.

But Smialowski, who has outsourced many of Sears' IS functions, questioned such comparisons. How much time, he asked, does a CIO such as Griffin spend on operational and personnel issues rather than on more strategic business issues?

Overall, outsourcing appears to be gaining favor among retailers. A survey of 300 retail IS managers conducted by Computer Sciences Corp. and *Retail Info Systems News* showed that 57% of respondents are outsourcing some IS functions or are planning to. That figure marks an increase of 10% from a year earlier. The leading target for outsourcing: application development.

Doing more with less

Retail IS managers are boosting productivity by increasing training, rigorously prioritizing projects and using small teams of IS generalists who can be moved from project to project.

Wal-Mart isn't exactly known for throwing money around. But the company is giving its IS staffers four weeks of training per year and plans to increase that to five weeks. Training has already made developers more productive, Mott said. IS generalists are also more effective than those with narrow technical specialties, he said. Because Wal-Mart's developers are "retailers first," they catch flaws in new applications early in development and cut the amount of rework required, he said.

At Sears, productivity also means sometimes saying no, Smialowski said. "We're weeding out items which will make life easier for [only] one or two people," focusing instead on applications that help large numbers of customers, he said.

Wanted: Detox for "data junkies"

Decision-support systems (DSS) are all the rage because they help retail managers make decisions about products, pricing and inventory management, according to a survey of IS managers released at the conference. But unless DSS applications are linked to the operational systems that execute price changes and orders, decision-support users can become "data junkies who discover great stuff and don't ever do anything with it," Griffin said.

RON GRIFFIN

One AS/400 software vendor at the show announced plans for just such integration. Intrepid Systems, Inc. in Alameda, Calif., said it will link its DecisionMaster DSS software to its Evolution retail management system.

Those are the sorts of links retailers such as Home Depot have so far had to develop themselves. But the integrated package won't ship until early next year, at which time it will run on Unix and Windows NT, Intrepid Systems officials said. It currently runs on OS/400.

As retailers rely more heavily on decision-support systems and data warehouses to analyze customer spending patterns, those systems must become as reliable and stable as older mainframe transaction systems, several IS managers said. "These are 'break your company-type systems,'" Smialowski said. Sears is leaning "very hard" on vendors to make such systems more fail-safe, he said. ■

Scheier is a *Computerworld* senior editor, management.

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Computerworld Editorial Calendar

July - October, 1996

Issue Dates	Ad Closings Color* B&W		Editorial Features	Show Distributions and Research Study Issues
July 1	June 14	June 21	**Closer Look:** Trends in desktop hardware and servers	
July 8	June 21	June 28	**Buyer's Guide to High-Speed Modems:** With users turning to the World Wide Web and demanding remote access to graphically-intensive applications, modems are playing an increasingly important role in corporate life. This Buyer's Guide will explore state of the art modem technology, look at where new modems work or need work, and help IS managers decide which class of modem is right for their applications.	**Informix User Group** Chicago 7/9 - 7/12
July 15	June 28	July 5	**Closer Look:** Intranets Lessons learned **IS Leadership Series**	
July 22	July 5	July 12	**Managing:** The IS executive as entrepreneur **Intranet Series**	
July 29	July 12	July 19	**Buyer's Guide to Sales Automation Software:** When IS moves to give sales representatives new tools to make sales presentations and log orders, a broad variety of technologies converge — notebooks, remote access software and databases. This Buyer's Guide will look at how IS managers address the special needs of this crucial application, and examine some of the commercially-available software designed to meet their needs. **Special Report:** Data Warehousing Second in a two-part series focusing on using and managing data warehouses. This issue will profile best-in-class examples of data warehousing and look at applications in data mining.	
Aug.	June 26		**Computerworld Client/Server Journal** Extended Enterprise: Managing dispersed groups of programmers Product Focus: Application development (GUI builders, compilers, componentware, tool suites, HTML page builders) Careers: Skill-ware — does it work?	**Harvey Study** Object World, CA World, Networks Expo, Mobile World, Networld + Interop, SIM Fall Conference
Aug. 5	July 19	July 26	**Closer Look:** E-mail integration Approaches to the thorny problem of making multivendor e-mail environments work together	
Aug. 12	July 26	Aug. 2	**Buyer's Guide to Internet Security:** Corporations may be flocking to the Internet, but they are doing it with a wary eye. Fear of hackers and other security concerns have kept the corporate world from taking full advantage of the Internet's capabilities. This Buyer's Guide will look at firewall products and other technologies designed to support robust but secure Internet applications. **Special Report:** The Future of Computing	
Aug. 19	Aug. 2	Aug. 9	**Closer Look:** Object Databases **IS Leadership Series**	**Object World** San Jose 8/20 - 8/22 Starch Study
Aug. 26	Aug. 9	Aug. 16	**Buyer's Guide to PC LAN Management Products:** How do you keep the departmental systems running without dedicating an IS staff member to tasks such as backup and access management? A variety of products help IS off load those responsibilities, and they work in cooperation with enterprisewide systems management packages. This Buyer's Guide will look at the strengths and weaknesses of some of those LAN-level management products, and explore user needs. **Intranet Series**	**CA World** New Orleans 8/25 - 8/30
Sept. 2	Aug. 16	Aug. 23	**Special Report:** Salary Survey Computerworld's annual salary survey captures salary levels for IS professionals from the CIO to help desk operator. A major undertaking, the survey results are broken down by company size, region and industry.	
Sept. 9	Aug. 23	Aug. 30	**Closer Look:** Netware **Special Supplement:** Network 25 A joint Computerworld, Network World special 60-page magazine profiling outstanding users of networking technology from around the world. In addition to a listing of 25 outstanding organizations and detailed company profiles, the issue will examine regional differences in networking, trends in technology and useful advice on emerging networking issues.	**Networks Expo** Dallas, 9/10 - 9/12 **Mobile World** Boston, 9/10 - 9/12 **Internet Commerce Expo** Anaheim, 9/10 - 9/12 Starch Study
Sept. 16	Aug. 30	Sept. 6	**Buyer's Guide to Internetworking:** With demand for bandwidth still on the rise, users are turning to technologies such as fast Ethernet and token ring switches. This Buyer's Guide will look at how users are addressing the bandwidth challenge and which products best meet their needs. **IS Leadership Series**	**Networld + Interop** Atlanta 9/18 - 9/20
Sept. 23	Sept. 6	Sept. 13	**Managing:** The best new books for IS managers **Special Report:** Top Web sites for IS managers **Intranet Series**	
Sept. 30	Sept. 13	Sept. 20	**Buyer's Guide to Groupware:** The old groupware model went out the window with the emergence of the World Wide Web. Now, products such as Lotus Notes, Microsoft Exchange and Novell Groupwise XTD are being repositioned to act as gateways to the Internet. This Buyer's Guide will look at how those server-based products are handling the transition, and at some of the Web-based alternatives being offered by startups.	**SIM Fall Conference** San Francisco 9/29 - 10/2
Oct. 7	Aug. 21		**Computerworld Client/Server Journal** Extended Enterprise: Road warrior war stories Product Focus: Networking (routers, network management suites, diagnostic tools, intranet components) Careers: The end of the specialist	Unix Expo Software Developers' Conf.
Oct. 7	Sept. 20	Sept. 27	**Buyer's Guide to RISC Servers:** Enterprisewide applications often are being driven by multiprocessor servers based on Reduced Instruction Set Computer technologies such as PowerPC, Alpha, Sparc, MIPS and PA-RISC. This Buyer's Guide will explore the challenge of running the corporation on these products, and the strengths and weaknesses of some of the key vendors.	**Unix Expo** New York 10/8 - 10/10
Oct. 14	Sept. 27	Oct. 4	**Closer Look:** Videoconferencing Is it really ready for the desktop? A look at the state of the art in the PC space.	

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Computerworld Editorial Calendar

October - December, 1996

Issue Date	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution & Ad Readership Study Issues
Oct. 21	Oct. 4	Oct. 11	**Buyer's Guide to Notebook PCs:** They are the core computing platforms for a growing percentage of corporate users. Designed to work in hotel rooms, airports and in the office, notebook PCs pack the punch of desktop systems but carry their own set of technical challenges. The Buyer's Guide will examine the strengths and weaknesses of leading notebook vendors, and explore some of the issues that user organizations face when they roll out notebook-based strategies. **IS Leadership Series**	
Oct. 28	Oct. 11	Oct. 18	**Closer Look:** Java Development **Intranet Series** **Annual Computerworld Campus Edition** (actual mail date October 31)	**Software Developers' Conf.** Washington, DC 10/29-10/31
Nov.	Sept. 25		**Computerworld Client/Server Journal** Extended Enterprise: Streamlining the virtual corporation Product Focus: Databases (modeling, management, query, analysis and reporting tools) Careers. New skill sets for on-line application development	Comdex Fall Database/Client Server World DB Expo
Nov. 4	Oct. 18	Oct. 25	**Buyer's Guide to Network Operating Systems:** Complex, enterprisewide applications need a robust network operating system to be working in the background. This Buyer's Guide will explore the NOS buying process, and examine how well NOS products such as Windows NT, Netware, Banyan Vines, and OS/2 Warp Server support the corporate user.	
Nov. 11	Oct. 25	Nov. 1	**Annual Computerworld Skills Survey:** Where is the talent going? What skills do you need to succeed in an IS career? This expanded feature details which IS skills are most in demand — by region, industry and technology — and which ones are bringing IS professionals the greatest rewards.	
Nov. 18	Nov. 1	Nov. 8	**Buyer's Guide to Multimedia PCs:** The day of the simple DOS-with-floppy-and-hard-drive PC has long passed. Today's applications demand video and sound, not just a blinking cursor. New generations of processor chips pack power, and they are tightly integrated with video and sound technology, high-speed CD-ROMs, speakers and huge-capacity disk drives. This Buyer's Guide will examine the high-end desktop product offerings of key vendors, and explore the technology path being carved out by the industry at large **IS Leadership Series**	**Comdex Fall** Las Vegas 11/18 - 11/22
Nov. 25	Nov. 8	Nov. 15	**Closer Look:** Outsourcing/systems integration **Intranet Series**	Starch Study
Dec. 2	Nov. 15	Nov. 22	**Buyer's Guide to Decision Support Tools:** CEOs and other executives are demanding new levels of dynamic access to corporate data. They need reports that will help them make strategic decisions. That leaves IS managers to implement technologies such as OLAP and ROLAP and links that deliver relational data through new vehicles such as the World Wide Web. This Buyer's Guide will examine some of the key decision support tools, and explore how user organizations are leveraging new technologies to support executive decision making.	**DB Expo** New York 12/2 - 12/6
Dec. 9	Nov. 22	Nov. ** 27	**Closer Look:** Software license management **IS Leadership Series**	**Database/Client Server World** Chicago 12/10 - 12/12
Dec. 16	Nov. 29	Dec. 6	**Buyer's Guide to Futuristic Technologies:** Technologies such as virtual reality display devices and sophisticated pagers may have a place in many corporate applications. This Buyer's Guide will examine some of the advanced technology products that actually may prove useful for IS managers and their staffs. They aren't just for fun and games anymore. **Intranet Series**	

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Issue Date	Ad Closings	Custom Publications	Show Distribution & Ad Readership Study Issues
Aug. 12	May 31	**White Paper:** **Supply Chain Management** (Part 3 of 4-part Manufacturing Directions Series)	
Aug. 19	June 21	**White Paper:** **RAID** (Part 2 of 4-part Enterprise Storage Management Series)	**Object World**
Sept. 2	June 21	**White Paper:** **Financial & Human Resource Applications** (Part 3 of 4-part Enterprise Software Directions Series)	
Oct. 14	Aug. 16	**White Paper:** **Hierarchical Storage Management** (Part 3 of 4-part Enterprise Storage Directions Series)	
Dec. 2	Sept. 27	**White Paper:** **Network & Systems Management: Adopt for Change or Get Out of the Way** (Part 4 of 4-part Manufacturing Directions Series)	**DB Expo**
Dec. 9	Sept. 20	**White Paper:** **Systems & Network Management** (Part 4 of 4-part Enterprise Software Directions Series)	**Database/Client Server World**
Dec. 16	Oct. 18	**White Paper:** **Client/Server Backup** (Part 4 of 4-part Enterprise Storage Directions Series)	

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Modems: On a high-speed chase

Our review indicates the 28.8Ks are fast, clean and poised to help mobile users hit Web pages and complex applications.

Picture a PC without a good modem as an elegant home without plumbing. It looks nice but lacks functionality.

Modems can be the weak link in any computing environment. A faulty modem can turn a notebook computer into a $5,000 piece of junk luggage if a business traveler can't connect to the home office for electronic mail.

Being one generation behind in modem technology may mean you can run out for coffee while waiting for a World Wide Web page to load. And a modem's inability to cope with telephone line noise — a problem with many of the early 14.4K bit/sec. modems — can effectively block a branch office worker from using a key application.

In today's business environment, modem technology is continually challenged by the growing complexity of the applications and data that employees want to access — in particular, those related to the Internet. The technology is also challenged by the fact that more people want to do more computing from the road or home.

When planning this Buyer's Guide, *Computerworld* sought to determine whether today's modem technology does the job for that group of users. We commissioned a laboratory, The Tolly Group in Manasquan, N.J., to test the modems that business travelers are most likely to rely upon: 28.8K bit/sec. PC Card devices.

The reviewers looked at the throughput, reliability and usability of modems produced by some of the market-leading vendors, as identified by industry analysts. As a group, the modems passed the test by providing throughput that came close to matching the posted 28.8K bit/sec. speed.

Of course, there is more to modems than the PC Card. Our second article (page 91) examines developments across the modem industry, where technology is testing the limits of analog lines and expanding into purely digital areas. Dial-up desktop modems are showing only incremental gains beyond 28.8K bit/sec., but there is plenty of growth potential for wireless and digital communications.

James Connolly, technology evaluations editor, can be reached at james_connolly@cw.com.

Review: Leading 28.8K notebook modems pass muster

Options, rather than price/performance, may help you decide which is best for you

By Craig S. Farrell

Choosing a 28.8K bit/sec. PC Card modem can be a daunting task simply because of the range of options. PC Card technology has advanced to the point where you don't have to settle for just a V.34 standard 28.8K bit/sec. modem.

For instance, a combination card with Ethernet and modem capabilities may interest you if your office happens to run on 10M bit/sec. Ethernet. Or if you're a mobile worker, buying a card with cellular capabilities may be enticing. One vendor, Megahertz Corp., offers a card with all three capabilities: a 10M bit/sec. Ethernet adapter, 28.8K bit/sec. modem card and cellular capabilities.

Computerworld commissioned The Tolly Group to take a look at 10 PC Card modems to test their speed and determine whether performance suffers when cellular or Ethernet capabilities are added. We ran a battery of tests on each modem to measure throughput. Multiple iterations were run with two different file types and with varying degrees of line impairment.

The good news: All the modems delivered average throughput of 26K bit/sec. or higher with reasonable line impairment. We had to load the lines with a level of white noise that you're not likely to encounter in the U.S. to check for any performance difference between the modems (see "How we did it" at left for more detail).

The bottom line: With performance basically equal among the competitors, deciding which modem to buy really comes down to price/features (what you will pay for extra features) rather than the familiar price/performance ratio.

For example, of the two Ethernet/modem combinations we reviewed, the Megahertz XJEMM3288T offers the richest feature set, and the price isn't much different from Motorola, Inc.'s Marquis. Megahertz's 3288 also has cellular capability, flash ROM and an XJack modem connector; Motorola's combo device doesn't.

If you're looking for a cellular-capable modem, Megahertz seems the most savvy of the cellular-capable PC card vendors. The company provides a price list of cables for the most popular brands of cellular phones and a toll-free number for ordering. The $349 Megahertz XJ4288 also supports two of the latest-generation cellular protocols, Microcom Networking Protocol (MNP) 10-EC and ETC; the others support only one of the two.

If you don't need a combo card or a cellular-capable modem, then take a look at the $249 New Media NetSurfer or the $269 Zoom Model 520 (the Zoom is cellular-capable, but you can't tell from the price). Both modems require a dongle, or special cable, which some end users may be likely to lose. End users who prefer an XJack-style connector can look at the $299 Practical Peripherals Pro Class. The Practical Peripherals card sports an EZ-Port Connector, which is indistinguishable from the XJack. The only drawback with XJack-style connectors is that they sometimes block access to a laptop's second PCMCIA slot.

What follows is a breakdown of the vendor models and what we determined from our testing. (For explanation of some of the terms used, refer to the glossary on the next page). ■

Farrell is an engineer at The Tolly Group in Manasquan, N.J., a consulting, testing and industry analysis organization. Testing was performed by engineers Thomas Callas and Antonio Torres. For more information, visit The Tolly Group Web site at: www.tolly.com or call (800) 933-1699.

How we did it

The Tolly Group used gear from Telecom Analysis Systems to create a highly tuned telephone network. A corporate Intranet was created to see how modems would perform in downloading file types commonly found when browsing World Wide Web sites. Two laptops were each equipped with a modem from the same vendor. A Texas Instruments, Inc. Extensa Pentium 75 notebook used TCP/IP and Windows 95 dial-up networking to connect to a Hypertext Transport Protocol (HTTP) server located on a Dell Computer Corp. Latitude XPI Pentium 120. The HTTP server run on O'Reilly WebSite 1.1., a commonly used Web server software package.

The client PC used Netscape Communications Corp. Navigator Gold 2.01 to browse the home page and to download two files: a 1.8M-byte Adobe Systems, Inc. Acrobat Portable Document Format file and a 345K-byte JPEG file. File transfer time was measured for each file and was used to calculate K bit/sec. rates. Each test was conducted twice, and the results were averaged. The tests were run at 15db and 30db (m) of white noise. Compression and error correction was enabled on all modems. All modems were set at their maximum serial port speed of 115K bit/sec.

VENDOR MODELS

Hayes Microcomputer Products, Inc.

NORCROSS, GA.
(800) 964-2937
WWW.HAYES.COM

HAYES OPTIMA 28.8

The Hayes Optima is the most expensive of the modems tested, at $579. It sports an XJack-style connector called the EZJack and is flash-ROM-upgradable. It conserves the battery with a sleep mode that draws only 5 milliamp (mA) when not in use.

QUICK ANALYSIS:
This modem has solid features and is easy to install. It is at the high end in price for the modems in this group.

FAX SOFTWARE: Hayes Smartcom for Windows
SOURCE FOR DRIVERS: Windows 95
SPECIAL CONNECTOR: EZJack Connector
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: No

Megahertz Corp. (A subsidiary of U.S. Robotics)

SALT LAKE CITY
(800) 527-8677
WWW.MEGAHERTZ.COM

MEGAHERTZ XJEMM3288T

At $489, this Ethernet 28.8K bit/sec. modem PC Card has an impressive feature set that includes an XJack connector, flash-ROM for driver upgrades, Hayes AutoSync and Digital Line Guard, which protects it if plugged in to a digital network.

QUICK ANALYSIS:
The Megahertz XJEMM3288T Ethernet/modem combo has top-of-the-line features. This card costs less than some modem-only cards.

FAX SOFTWARE: Fax Works 3.0 for Windows
SOURCE FOR DRIVERS: Disk
SPECIAL CONNECTOR: XJack Connector
LAN ADAPTER TYPE: Ethernet (10 Base-T)
CELLULAR-CAPABLE: Yes

Megahertz XJ4288

Like the XJEMM3288T, the $349 Megahertz XJ4288 is a cellular-capable modem that includes an XJack connector, flash-ROM, Hayes AutoSync and Digital Line Guard. The XJ4288 also supports the ETC cellular protocol and MNP10-EC. The card also features a sleep mode that draws only 20mA when not in use.

QUICK ANALYSIS:
With support for ETC and MNP10-EC cellular protocols, the XJ4288 is the most cellular-centric card we evaluated. The XJ4288's price is very competitive.

FAX SOFTWARE: Fax Works 3.0 for Windows
SOURCE FOR DRIVERS: Disk
SPECIAL CONNECTOR: XJack Connector
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: Yes

Microcom, Inc.

Norwood, Mass.
(800) 822-8224
www.microcom.com

Microcom TravelCard 28.8P
This $349 modem is cellular-capable and supports the MNP10 protocol, with MNP10-EC support to be added in the near future. The documentation recommends using an "appropriate cable" to connect the modem to your cellular phone; there is no indication of how one acquires such a cable. The modem features Microcom's Advanced Parallel Technology (APT), which allows the modem to operate in parallel mode. The vendor claims that APT boosts throughput up to 300K bit/sec., but in these tests, the feature didn't give the Microcom modem an advantage. The modem also features a deep-sleep mode (5mA). The card requires a dongle and isn't flash-ROM-upgradable.

QUICK ANALYSIS:
The TravelCard 28.8P provides a good feature set plus Microcom's Advanced Parallel Technology. The TravelCard's price is in the middle of the pack here.

FAX SOFTWARE: Fax Works 3.0 for Windows
SOURCE FOR DRIVERS: Windows 95
SPECIAL CONNECTOR: 7-pin cable to RJ11 connector
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: No

Motorola Information Systems Group

Mansfield, Mass.
(800) 446-6336
www.mot.com

Marquis
The Marquis at $499 is the most expensive of the Ethernet/modem combos. It uses 3Com Corp. technology for the LAN adapter, and the card is actually recognized by Windows 95 as the 3Com EtherLink III (3C562) LanModem PC Card. The card doesn't have a sleep mode, but it operates at 50mA — lower than some cards operate in that mode. The modem cable for the Marquis includes two RJ11 jacks: one for telephone and one for modem.

QUICK ANALYSIS:
The Motorola combines technology from two industry leaders: 3Com Ethernet technology and Motorola modem technology. The card's price is at the high end of the modems listed here.

FAX SOFTWARE: QuickLink Mobile for Windows
SOURCE FOR DRIVERS: Disk
SPECIAL CONNECTOR: None
LAN ADAPTER TYPE: Ethernet (10Base-T)
CELLULAR-CAPABLE: No

Multi-Tech Systems, Inc.

Mounds View, Minn.
(800) 328-9717
www.multitech.com

Multi-Modem MT 2834LT
The $399 Multi-Modem has a unique duplex phone connector called the CoolJax. You can plug your phone right in to the CoolJax and use it any time the modem isn't in use. The modem is also flash-ROM-upgradable and has a sleep mode (27mA).

QUICK ANALYSIS:
The MultiModem is a breeze to install, includes the standard features and is competitive in price with the other modems in this article.

FAX SOFTWARE: Multi Express 3.01
SOURCE FOR DRIVERS: Windows 95
SPECIAL CONNECTOR: None
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: No

Glossary

Cellular protocols — ETC (Enhanced Throughput Cellular) and MNP10-EC are new error-correction cellular protocols. They help prevent disruptive signal fading and reduce the number of dropped calls.

Dongle — a cable with a connector at one end that attaches to the PC card device, with a network or RJ11 telephone connector at the other end.

Ethernet/modem PC Card — a PC Card modem that performs more than one communications function, such as an Ethernet network interface card function and an asynchronous modem function.

Flash-ROM — on-board read-only memory that allows PC Card drivers to be downloaded and upgraded.

PCMCIA card — Personal Computer Memory Card International Association card. The trademarked name is "PC Card," but many people refer to these credit-card-size cards by the association responsible for PC Card standards.

Sleep mode — To increase battery life, some PC Cards enter a power-saving mode when communications aren't active.

Synchronous communications — data transmission with bits transmitted at a regular periodic rate.

V.34 — An international modem standard for dial-up modems allowing speeds of up to 28.8K bit/sec.

XJack-style connector — A pop-out RJ11 jack that is built in to the PC Card.

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Remote Control

[illegible]

Top 10

PC World's Top 10 Modem Picks
June 1996 issue

DESKTOP

Microcom DeskPorte 28.8P
"Reasonably fast. New low-cost version, the 28.8S (model), is a good alternative."

Motorola ISG Lifestyle 28.8
"Basic features, but nice price and toll-free support. Connects at 28.8K bit/sec. nearly all the time."

U.S. Robotics Sportster V.34
"Affordable, excellent performance, manual volume control."

Microcom Deskporte Fast V.34
"Not cheap, but very easy to use. Plain-language display, toll-free tech support."

Cardinal Technologies MVP288XV
"Performance is so-so, but you get voice mail, VoiceView and cellular support."

PC CARD

Zoom V.34C Model 520
"Installation likely to require support call, but best price and performance on PC Card chart."

Microcom TravelCard 28.8P
"Excellent performer comes with toll-free support."

MultiTech Systems MultiModem LT
"Alluring price on true Plug and Play unit. High connect reliability, too."

Megahertz XJ2288
"Comes with excellent documentation, pop-out phone jack. Great for technophobes."

Hayes Optima 288 V.34 +Fax for PCMCIA with EZJack
"Low connect rate at 28.8K bit/sec., but affordable. Now detects calling-card tone."

VENDOR MODELS

New Media Corp.

Irvine, Calif.
(800) 453-0550
www.newmediacorp.com

NetSurfer
The $249 NetSurfer features the lowest price of any modem in this test and is also cellular-capable (ETC cellular protocol). An RJ11 interface to connect the modem to a cellular phone must be purchased from a third-party vendor. With its sleep mode feature, NetSurfer doesn't draw any power until the modem is used. NetSurfer also features AutoSync for synchronous communications. NetSurfer is a dongle-variety PC Card.

QUICK ANALYSIS:
NetSurfer has many of the standard features. The rock-bottom price is the least expensive of the modems tested.

FAX SOFTWARE: WinFax Lite 4.0 for Windows
SOURCE FOR DRIVERS: Disk
SPECIAL CONNECTOR: None
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: Yes

Practical Peripherals

(Product division of Hayes Microcomputer Products, Inc.)
Norcross, Ga.
(800) 442-4774
www.practiret.com

ProClass PCMCIA-288T2-EZ
The $299 ProClass with EZ-Port is the lowest-priced pure 28.8K bit/sec. modem that features an XJack-style connector. The modem also features Hayes AutoSync, sleep mode (5mA) and is flash-ROM-upgradable.

QUICK ANALYSIS:
The ProClass offers the essential features, an XJack-style connector and is reasonably priced.

FAX SOFTWARE: WinFax Lite 4.0 for Windows
SOURCE FOR DRIVERS: Disk
SPECIAL CONNECTOR: None
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: No

U.S. Robotics

Skokie, Ill.
(800) 877-2677
www.usr.com

Sportster 28.8PC Card Faxmodem with DataView Connector
The $329 Sportster is a 28.8K bit/sec. modem that features the DataView Connector, which has four LEDs and an RJ11 jack for phone and modem connection. This is the only PC Card modem to feature the kind of send/receive LEDs normally found only in external desktop modems. The Sportster isn't flash-ROM-upgradable and doesn't have a sleep mode.

QUICK ANALYSIS:
This product is attractive to many end users because its price is in the middle of the pack for the modems evaluated.

FAX SOFTWARE: QuickLink II for Windows & DOS
SOURCE FOR DRIVERS: Windows 95
SPECIAL CONNECTOR: DataView Connector
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: No

Zoom Telephonics, Inc.

Boston
(617) 423-1072
www.zoomtel.com

Zoom PCMCIA V.34C Model 520
The $269 Zoom PCMCIA modem has many of the same features offered by the Megahertz XJ4288, but at a lower price. The card is flash-ROM-upgradable, cellular-capable (MNP10-EC cellular protocol), has a sleep mode (40mA) and PC Card-Guard to protect the card from damage if plugged in to a digital phone system. The Zoom modem requires a dongle.

QUICK ANALYSIS:
The Zoom modem has plenty of features at one of the lowest prices of the group.

FAX SOFTWARE: WinFax Lite 4.0
SOURCE FOR DRIVERS: Windows 95
SPECIAL CONNECTOR: 7-pin cable to RJ11 connector
LAN ADAPTER TYPE: None
CELLULAR-CAPABLE: Yes

What's next down the pipe

By Kevin Burden

Frustrated with the speed of remote connections? Most users of today's modem technologies are. The problem is that users are butting the limits of the analog telephone network, which is why they ask, "What's next?"

The goal of any remote user is to simulate the office environment. But for that to happen, today's kilobit speeds must increase to megabit speeds, and that's still a couple of years away, says Dan Merriman, director of remote communications at Giga Information Group in Cambridge, Mass.

Megabit speed will happen; but for now, users are handcuffed to kilobit speed technology. Here's what you can expect from the different modem technologies — dial-up, wireless, Integrated Services Digital Network (ISDN), Asymmetric Digital Subscriber Line (ADSL) and cable modems — during the next few years.

Dial-up

Dial-up modems, whether desktop or PC Card, are stuck at 28.8K bit/sec. and won't get much faster any time soon. Some vendors may squeak out a few more kilobits to the low 30K bit/sec. range, Merriman says, but such increases won't be too noticeable.

Despite the speed stalemate, dial-up modems will continue to be among the most popular because they provide access to the ubiquitous asynchronous telecommunications lines. That means frequent travelers will be stuck for some time at today's 28.8K bit/sec. speed until ISDN lines are common in hotels.

Shopping for desktop or PC Card dial-up modems is easy because there aren't many differences among them, Merriman says. There are a variety of personal preference features to choose from, such as connector styles and sleep modes. And some, such as TDK System, Inc.'s Cyber Express 3000, even ship with Netscape Communications Corp.'s Navigator 2.0 software with account setup wizards. (See what other features are available in our PC Card modem review, page 86). But essentially, performance is nearly identical across the board, according to Merriman and the *Computerworld*-commissioned lab test.

Wireless Modems

Wireless modems have more room for improvement than analog modems. The highest speed you can hope for is 14.4K bit/sec., and some are still in the 9.6K bit/sec. range.

There are two types of wireless modem: Circuit switch, which essentially dials up over analog lines like a traditional wired modem; and packet switch, which transmits data in short bursts. Circuit switch modems at best operate at 14.4K bit/sec. but will get closer to 28.8K bit/sec. during the next year, Merriman says. Performance of packet switch modems is measured in packets per second and is closer to the 9.6K bit/sec. range.

When buying a wireless modem, look for one that supports one or both of the new error correction cellular protocols: MNP10-EC and Enhanced Throughput Cellular. The protocols help prevent disruptive signal fading, help reduce the number of dropped calls and can decrease cellular phone bills. Modems with both protocols have a better chance of establishing an error correction link than modems with only one protocol.

ISDN

Digital modems designed for use with ISDN lines are the next step up for users frustrated with 28.8K bit/sec. speeds. ISDN zips along at 128K bit/sec. by using two 64K bit/sec. channels that behave as one. That's still a far cry from the megabit speed everyone wants, but it's available now and will be among the best interim steps over the next two to four years until ADSL and cable modems are available, says Sanjay Mewada, an analyst at The Yankee Group in Boston.

ISDN modems won't get any faster than they are today, but Merriman says they're getting easier to install and configure. Prices for the modems and the service will drop as faster connection options become available during the next two years.

But just when you become comfortable with ISDN, the regional Bell operating companies may ask you to upgrade to their newer technology when it's available. ISDN runs over the Public Switch Telephone Network (PSTN), the same network used for voice traffic, which will stress out as more users conduct daylong data sessions instead of 10-minute phone calls.

ADSL

ADSL is the next generation of digital technology from the phone companies, and it is how they intend to finally squeeze megabit speed from the existing phone network. ADSL promises transmission speeds of up to 6.144M bit/sec. going down to a remote site and nearly 1M bit/sec. coming back.

ADSL doesn't travel over the PSTN. Instead, it's switched over to a data network at the phone company's central office, which turns twisted-pair phone lines into digital pipes. ADSL requires new modem technology, but Merriman predicts that the phone companies will offer attractive ways to switch to avoid the problems created by heavy ISDN usage.

ADSL will be available in focused areas late this year, in deployment during 1997 and 1998 and widely available in late 1998 and in 1999, Merriman says.

Cable Modems

About the same time we see ADSL, cable companies will be releasing cable modems that transmit at 10M bit/sec.; 30M bit/sec. is planned for the future.

The primary target for cable modems will be the residential market because "most of us don't have cable in our offices," Mewada says. But some modem vendors are equipping cable modems with Ethernet connections that can link remote PCs to corporate networks.

The problem with cable modems today is that less than 10% of U.S. residences are equipped with cable capable of two-way communication, Mewada says. ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line.

Pointers

BOOKS

Modems for Dummies
By Tina Rathbone
IDG Books Worldwide, Inc.
Foster City, Calif.
1994, 463 pages

More Modems for Dummies
By Tina Rathbone
IDG Books Worldwide, Inc.
Foster City, Calif.
1996, 383 pages

PCMCIA Primer
By Larry Levine
M&T Books
New York
1995, 246 pages

PCMCIA System Architecture
By Don Anderson
Addison-Wesley Publishing Co.
1995, 440 pages

MISCELLANEOUS REFERENCE

Curt's High Speed Modem Page: PC Modem News, FAQs, Files, Tips and Tricks
www.teleport.com

Costno Modem Page
www.rosenet.com

modems.com
www.modems.com

Black Box Glossary of Data Communications Terms
www.blackbox.com

ASSOCIATIONS, ETC.

International Telecommunications Union
Geneva
www.itu.ch

NEWSGROUPS
comp.dcom.modems
comp.sys.ibm.pc.hardware.comm

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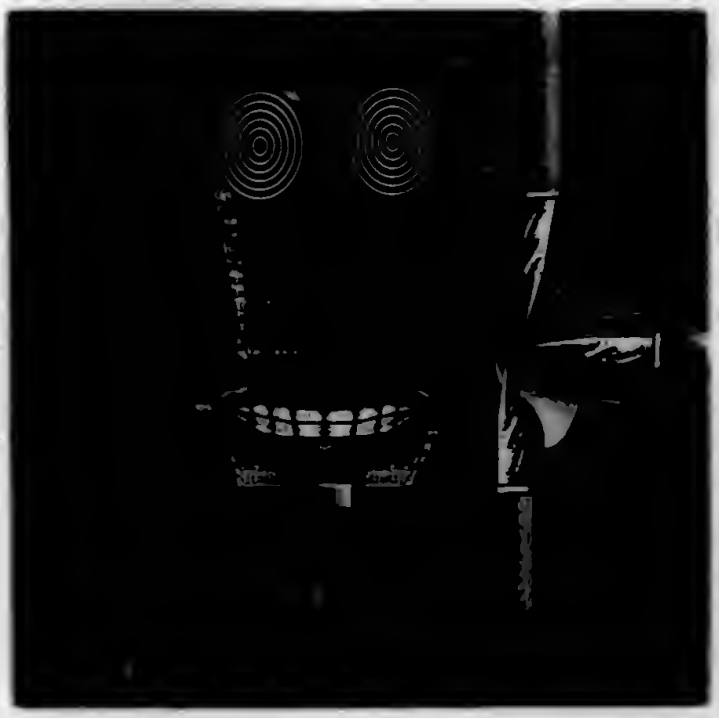

Do your employees spend too much of *your* time surfing the Web? Is it damaging their work? Their lives? Is Internet addiction a corporate menace or just the latest media-created myth?

By Daniel P. Dern

"It seems like everybody I know is a Web addict," says Larry Chase, president of Chase Online Marketing Strategies in New York. "They stay on and continue to surf after the mission has been accomplished. The worst cases are in denial and call it work so they can then complain about how overworked they are."

Chase isn't immune to the siren song of the browser either. Jan Chase, his wife, says, "Well, I've gotten used to talking to the back of Larry's head, and sometimes I find myself calling him 'Larry.com.' If all else fails, I'll learn how to send him E-mail or pull the power cord out."

As more workers gain access to the World Wide Web, managers have begun to worry about "excessive Webbing" and that employees are becoming Web addicts. CNBC, *Newsweek* and dozens of daily newspapers have done breathless stories on the topic. Reports about "Internet addiction disorder" are popping up.

But is the Web really addictive? Is it more addictive than any other activity? More than bowling, say? Early research is inconclusive at best.

It certainly seems unfair to single out computers and online services as the downfall of some personality types. The world is full of people hooked on soap operas, video games, sports, reading, alcohol, shopping and channel-surfing.

Nevertheless, as the general media turn their klieg lights on all things Web, it's reasonable to find out who's getting lost in the Internet and what information systems' obligations are.

Click, *page 96*

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CONTINUED FROM PAGE 93

Remember Pong?

Computer-oriented obsessions are far from new. During the 1970s and 1980s, computer games such as Adventure (a.k.a. Colossal Cave), Zork and Rogue brought many a departments to a productive standstill for days or even weeks. This was certainly true at Prime Computer, Inc.'s marketing and engineering departments, where I worked in the late 1970s. I've still got my maps.

As sites came online, new counterproductivity opportunities arose, such as Usenet newsgroups; role-playing Multi-User Dungeons; Internet Relay Chats (IRC); and chat rooms. The advent of personal Internet accounts that are unrelated to employment or school further enabled those with enough stamina to spend hours and even days online, sometimes disconnecting barely enough to eat and sleep.

Today's desktop PCs, aside from letting users run Doom, offer even more seductive time sinks, such as the ubiquitous Windows solitaire and the endless rearranging of fonts and desktop icons.

And now there's the Web, where for each hit of relevant value, there are endless links to explore an electronic minefield for the obsessive, compulsive, addiction-prone or easily distracted computer user.

But the question remains: Is it addictive?

Viktor Brenner, a doctoral candidate at the Marquette University Counseling Center in Milwaukee, recently set out to examine the psychological impact of Internet activity and determine whether there was any correlation with established medically addictive behavior. Brenner points out that true addiction has medical implications, whereas terms such as "Internet addiction" have become common parlance. He likened it to pathological gambling.

He posted a questionnaire on the Web (www.mu.edu/dept/ccenter/intro_srv.html). Based on 200 usable responses, Brenner's report states, "The skewed distribution of scores supports the existence of a subgroup ... whose Internet usage has caused them more deficits in role functioning than the norm."

In other words, there may be something to Internet addiction, but only more research can tell. Whatever the answer, for managers, it may come down to relevance vs. distraction: Are your employees addicted to, or just very fond of, the Web?

'Reality prevails'

"To some extent, [addiction] is an inevitable phase in the life of a new Internet user," says Glee Harrah Cady, manager of information services at Netcom On-Line Communications Services, Inc. in San Jose, Calif. Indeed, multihour sessions serve as self-training for many users as they get the hang of browsers, bookmarks and search engines. "We get excited about all the nifty things that we can find and do. We spend a few too many long days and nights trying to see it all. Eventually, for most of us, reality prevails because there aren't a lot of 37-hour days."

But there's no question that some users spend too much time surfing long after their newbie days are over. "It's easy to get addicted, especially if you have the kind of personality that gets easily distracted," says Zachary Kessin, former webmaster at an Internet service provider. "I've been a Web junkie and at other times an IRC junkie, Usenet junkie, etc. ... There's always the feeling that if I just give my search engine the right terms, it would find more useful data. It's hard to know when to stop looking."

Larry 'Larry.com' Chase *admits he spends his fair share of time on the 'net. Jan Chase finds herself addressing the back of his head but hasn't yet pulled the plug on his PC.*

"It's also hard to know when you've found enough," says Joe Alhadeff, a New York lawyer who has a master's degree in business administration and deals with Internet issues. "And it's hard to stop following things that are interesting but not relevant."

For some, addiction takes on a more active form: endlessly updating or tweaking their internal bookmark hot lists or their publicly visible Web pages. Many turn their obsession into new careers, becoming Web site designers, programmers or managers. Others become Internet searchers, trainers, consultants or writers.

Does this desire to keep clicking burn out after a while? "Probably not," Kessin says. "People who have addictive-type personalities or are distractible have been through it before and will do it again. After a while, you do realize that there isn't that much out there."

It's unclear whether Web junkies are responsible for excessive consumption of their companies' 'net connections. And some Web-based activities — listening to RealAudio broadcasts or downloading weather maps, for instance — consume significant resources even as employees continue with productive, non-Web-oriented work. So it's important not to confuse overuse of technical resources with bad time management.

"I'd guess that what most Web junkies end up doing is using their own time," Kessin says.

Increasingly, there are times when people must use the Web. The challenge remains — knowing when enough is enough, whether they've found enough hits, whether to try later or give up, whether they simply don't have time for Webbing, and when to keep on clicking just a few more times.... ■

Dern is an independent Internet writer, speaker and consultant in Newton, Mass. He can be reached at ddern@world.std.com and www.dern.com

What you can do about it

What can managers do to help prevent or minimize excessive Webbing in the workplace?

- **Educate your users. As part of internal orientation and training, provide a heads-up regarding the dangers of oversurfing.**
- **Set reasonable expectations. Suggest a well-defined number of hours for users' introductory practice; consider subsidizing dial-up Internet accounts for a month, enabling people to practice after work hours.**
- **Encourage employees to get nonwork Internet accounts for personal activity; consider arranging special deals with local providers.**
- **Expedite the learning curve by providing an internal Web page that has links to key Internet resources, such as Web sites for main suppliers, customers and industry links; relevant hardware/software vendor support sites; news sources; and search engines.**
- **Use programs to monitor or restrict user access to the Web. Many managers say this is paternalistic or counterproductive — that these tools may be a good way to keep users from wandering over to *Playboy* — but there'll always be legitimate, accessible areas to tempt your employees.**

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Computer Careers

Behind every dumb resume lurks a presumably dumber job candidate. Max Messmer tells IS professionals how to do it right and avoid

. . . Stupid resume tricks!

By Rosemary Cafasso

For years, Max Messmer has regularly received an embarrassing number of stupid resumes at Robert Half International, Inc. So many, in fact, that the company uses the term "resumania" to categorize all the bloopers.

Messmer, chairman and CEO of the $630 million placement firm in Menlo Park, Calif., says many job hunters really struggle with resumes and cover letters. The reason: They don't know what works and what doesn't. Messmer, author of the recently published book *Job Hunting for Dummies*, shares his advice on how to avoid resume suicide and cast yourself in the best light.

CW: What are some of the resume gems that you can recall?

MESSMER: I have one here. It's over five pages long. It has a laundry list of every technology that this person ever came in contact with. It's difficult to wade through all this technical jargon, and it never indicates how [he] had used the technology or developed [his] skills. The guy is trying to impress me, but there's no indication of what he's done. He's cluttering the picture, and he's forgetting that this [information] should come up in the interview, not the resume. This communicates poor judgment.

CW: Why would be be so far off base?

MESSMER: There are a lot of people giving advice on what you should and shouldn't do [with resumes]. But common sense is a good place to start. If you know that the resume is for getting the interview, just cover the main points and give them enough to figure out that you have these qualities.

CW: Are there any other rules that apply to [information systems] professionals specifically?

MESSMER: In general, hiring managers are looking for certain things, and those apply equally [across all fields]. But in IS, you need to be more precise in listing information. Make sure you give the reader enough information to convey your skill sets. You can tell them about software programs, but you need to explain what you did with that software.

CW: What happens to goofball resumes?

MESSMER: Realistically, they have a very short shelf life. They create the wrong impression on hiring managers. These resumes say that the author is either too glib or careless, or too haughty, or that they don't take their career seriously. It tells the hiring manager that this person will be difficult to manage because they lack professionalism.

CW: What drives people to create such bloopers?

MESSMER: What's driving it is a desire to stand out in a crowd. Particularly in the tough IS markets, people feel the need to be unique. But people need to stress their achievements in the resume. What employers want to hear about are accomplishments that would lead them to believe you are a person who would help them develop a new application or product or hire and train employees.

CW: So what are the things that don't belong on a resume?

MESSMER: Most people try to put too much in. The other mistake is to put in a lot of personal information. You want to be very judicious in this process.

CW: Your company did a survey recently that showed more than half of all executives consider the cover letter as important as or more critical than a resume. Why?

MESSMER: The cover letter will exclude you if it isn't done correctly. It is a chance to show how well you communicate. Also, it is a chance to work in a sentence or two to catch the reader's attention — not by being cute, but by showing you have an interest in the company's business — especially valuable for IS professionals.

A properly written cover letter and resume can change your life. It is worth some attention. What works is an extremely well-written and well-tailored cover letter. Spend a little time doing homework on your target. The resume, if drafted properly, will list accomplishments. Stay away from gimmicks. ●

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Resume outtakes compiled by Robert Half International

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Cafasso is a freelance writer in Walpole, Mass.

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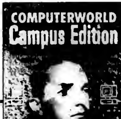

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Database Analyst: Designs, develops, and modifies various relational databases and associated statistical programs for use by provider of financial information regarding mutual funds. Will use SQL to insure integrity of data and data acquisitions in various formats in a network environment. Will generate various reports and maintain and develop appropriate databases to generate financial reports in a sophisticated relational database using SQL and Object-Oriented Programming using Smalltalk and C++, including implementation of graphic user interfaces, technology and techniques, including accounting and financial reports. Will use principles of File Transfer Protocol in a client/server model to insure database integrity in a network environment. Requires Master's degree in Computer Science. Also requires six months experience in the job to be performed or six months experience as a Consultant. If experience in related field, entire experience must include use of Object-Oriented Programming language and technology for modification, development, and maintenance of a relational database using SQL to generate various financial and accounting reports including implementation of graphic user interfaces, technology and techniques. Education to include completion of one project in Object-Oriented Programming using Smalltalk and C++. Education to include completion of one project using principles of File Transfer Protocol in a client/server model to insure database integrity in a network environment. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week to $45,000 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send resume to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Sheila Lindsey, Reference #V-IL 15180-L. An Employer Paid Ad. No Calls - Send 2 copies of both resume and cover letter.

System Analyst: Design GEAC mainframe, NCR 7760 item processing systems & Net Ware 4.1 servers connectivity, SaxeFAXserv, Xyplex servers & NM5520, FCD-1s CSU/DSU, FTELAN & NDS services infrastructure; develop Multiprotocol IPX/SPX, TCP/IP, SNMP applications to Novell NetWare, HP-UX, SUN Unix environment; research Oracle Data Warehouse using Design 2000 CASE tools for financial applications; manage Networker backup, SmartCD Server, LanDesk, CreditDesk, Papergate s/w. Req: MS in computer sci; 1 yr exp in job offered or related as network analyst or computer eng; related exp include 6mon involving Novell Netware, communications servers, Netware connectivity; 6mon related to design of telecommunication server & TCP/IP protocol. 40hr/wk, 8-5pm, $807.05/wk. Send resumes to 7310 Woodward Ave. Rm 415, Detroit, MI 48202. Ref No. 72898. Employer paid ad.

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Submit resume to: City of Charlotte, Human Resources Department, 600 E. 4th Street, Charlotte, N.C. 28202

Seek programmer/analyst: perform problem analysis & recommend/implement system solutions using C, OS/2 & Presentation Mgr. Gather & analyze requirements for business, process & data, develop work plans, schedules & est. work efforts, provide support & enhancement to application &/or participate as a team member on new development projects, i.e. programming, testing, documentation, training & implementation tasks. Require B.S. in Computer Science or Computer Engineering. Require 3 months experience in job offered or 3 months experience as engineer developing software in C, SQL & OS/2 presentation mgr. Require 1 course in Object Oriented programming, Software Engineering design, & artificial intelligence. $45,800/yr. Apply to the Texas Employment Commission, Ft. Worth, Texas or send resume to the Texas Employment Commission, 1117 Trinity, Room 424T, Austin, Texas 78778. J.O.# TX 7504673. Ad paid by an equal opportunity employer.

Programmer/Analyst (Dallas/Ft. Worth, TX). Performance of communications applications software programming & systems development from design to implementation. Use of X.25 communications protocol. Real-time process dev. in C/UNIX & use of INFORMIX, SQL & 4GL for database programming. Bachelor's in Comp. Sci. or Comp. Studies. 2 yrs. exp. in job offered. $45,000/yr., M-F, 9-5, 40 hrs wk. Apply to the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. # TX5039864. Ad Paid by An Equal Opportunity Employer.

Software Development Engineer: Creates, designs, and develops graphic user interfaces in conjunction with windows-based relational databases for purposes of establishing various internal connections and homepage graphics. Performs integration of graphics with stored data for accessing of data through pictured interfaces in various telecommunication protocols. Uses C++, Visual Basic, Object Oriented Programming and RDBMS to develop appropriate data manipulation and querying in a report-generated module for purposes of controlling picture displays in a networked environment. Designs and establishes a GUI in a X-Windows network environment which can act as a front-end tool for dynamic exchange of data in a multiple information distributed system environment. Requires M.S. or completion of all coursework requirements for M.E. degree in Computer Science. Also requires six months experience in the job to be performed or six months experience as a Programmer. If experience in related field, entire experience must include the design and development of appropriate data manipulation and querying in a report-generated module for purposes of controlling picture displays in a networked environment including establishing a GUI in a X-Windows network environment which can act as a front-end tool for dynamic exchange of data in a multiple information distributed system environment. Education to include completion of one project in the design of an internal server which provides data manipulation and interactivity. Hours: 8:00 a.m. - 5:00 p.m. 40 hours per week to $45,000 per year salary. Must have proof of legal authority to work permanently in the United States. Please send resume to: Marcie Newman, Metamor Technologies, Ltd., One North Franklin, Chicago, Illinois 60606. No Calls.

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To work with statewide Criminal Justice System. Responsible for PC's within the Agency and for bridge/router based connections with other Agencies. Duties include hardware & software installation/maintenance, application support, training & network configuration/planning. Candidates should have thorough knowledge of Novell 3.12 & Windows based PC applications. Salary range approximately 40K.

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Criminal Justice agency seeks Software Project Manager for our Programming Unit. Strong knowledge of COBOL and the ability to write, compile, debug, and document COBOL Code. Experience in Unisys Mainframe environment, Windows Programs & 3GLC knowledge. Salary range approximately 45K.

(3) FEDERALLY FUNDED PROGRAMMER/ANALYST

Criminal Justice Agency seeks (3) Programmer/Analysts with a strong knowledge of COBOL, the ability to write logical, well structured COBOL programs, and knowledge of Fourth Generation Languages. Salary range approximately 40K.

Candidates should submit resumes to:
Criminal History Systems Board, 200 Arlington Street, Suite 2300
Chelsea, MA 02150, Attn: Barbara J. Hurwitz, Director of Administration

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Bachelor's Degree in Computer Science or equivalent field. CNE desired with a background of 5 to 8 years experience in Network applications.

DIRECTOR OF MANAGEMENT INFORMATION SERVICES

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The Cobb County Board of Education reserves the right to accept equivalent qualifications as the Board may deem appropriate and acceptable. Demonstrated ability is defined as successful experience and skill in required qualifications. Interested candidates may respond in writing to:

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MIS Director - Designs implements & directs the support of regional information/medium system & local wide area networks servicing 25 + remote locations. Administers system, including personnel security, technology & maintenance. Trains & supervises programmers and users. Periodically reviews hardware & software & recommends upgrades. Must have B.S. degree or Computer Science or Computer Engineering plus 4 yrs exp in the job offered or a related occupation (Systems Analyst for business applications involving LANS, WANS) $62,500/yr M-F 9am-5pm. Send resume only to Job Service of Florida, 701 SW 27 Ave #47 Miami, FL 33135-3014 Job Order # FL 1449973

SYSTEMS ENGINEER to design, develop test integrate maintain and support computer telephony hardware and software systems using Assembly, C, Informix 4GL, Visual Basic, and UNIX shell programming and Tools in a TCP/IP networked environment under SCO UNIX and Windows operating systems utilize digital analyzers and oscilloscopes. Require B.S. degree in Electrical/Computer Engineering with two years of experience in the job offered. Salary $47,300/year. M-F 9 a.m. to 5 p.m. Apply with resume to: Georgia Department of Labor Job Order # GA 5995245, 2943 N. Druid Hills Rd. Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office

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Software Engineer Develop C++ database applications and graphic user interfaces (GUI) using object oriented design and analysis techniques on distributed networked UNIX platforms. Design and develop Informix and ORACLE databases and summarization procedures for calculation of revenue opportunities for commercial airline flights. Develop procedures for flown loading data from reservations systems to UNIX workstations. Use network communications protocols. Develop procedures to download data from heterogeneous distributed systems. Master of Science degree required in Computer Science plus 1 year of experience in the job duties described above. University level project experience may be substituted for experience in the job offered. Salary $38,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, TX 78701. JO# TX7855611. Ad paid by an Equal Opportunity Employer

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PROGRAMMER ANALYST (2 openings) (Ref# 83596) Plan develop test & document computer programs, applying knowledge of programming techniques & computer systems, evaluate user requests for new or modified programs to determine feasibility, cost & time required compatibility with current system & computer capabilities, consult with users to identify current operating procedures & clarify program objectives, formulate plan outlining steps req'd to develop program using structured analysis & design, convert project specifications into sequence of detailed instructions & logical steps for coding into language processable by computer, apply knowledge of computer programming techniques & computer language, analyze, develop, enhance, maintain & test application and database systems using each of the following: IBM ES 9000, IBM PC/AT, LAN Windows NT Server, Windows Communication Library, SQL Server, Name Shared Memory, Remote Gateway, PVCS Version Manager, C, C++, Visual Basic, Windows based Application Programmers Interface (API) & also using ORACLE & UNIX. Req: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed & exp. 2 yrs exp in the job offered or 2 yrs exp in a related occup such as Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Graduate Assistant. Will accept 3 yrs of college ed plus 3 yrs exp in the job offered or in a related occup in lieu of the req'd ed & exp. Must have some related exp designing, analyzing & developing database systems & using each of the following: Visual Basic, SQL Server, LAN Windows based Application Programmers interface (API) & C. $44,000/yr, 40 hrs/wk, 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Refs. Employer Paid Ad

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Software Engineer I to design & develop call processing software running on a fault tolerant computer using the PSOS real-time operating system for the Dispatch Application Processor, a component in a digital trunked radio system for domestic & international markets. Design & develop software running on a VME computer to simulate external system components, including simulation of subscriber radios placing calls & moving between radio frequency cells) using Frame Relay & LAP-D communication protocols, to facilitate stress testing & feature verification of the Dispatch Application Processor. Design & develop GUI interface to software using MOTIF development tools, develop software to certify system capacity & access time requirements are met, convert high level software requirements into detailed test case scenarios for stress testing & feature verification using structured software development methods, & perform software development in C language within a UNIX environment. Master's degree in Computer Science required as well as one year of experience as a Software Engineer I or one year of experience as a Software Technician. Experience must have been gained within a telecommunications environment including designing & developing a Group Special Mobile (GSM) user interface system to communicate with a GSM simulator to set-up calls between two subscribers within a cell or two different cells, developing GUI interfaces using the MOTIF development tool & programming in C in a UNIX environment. Applicants must have proof of legal authority to work permanently in the U.S. 40 hours 8:00am to 4:30pm. 43,000/year. Send 2 copies of resume & cover letter to Illinois Department of Employment Security, 401 S State-3 South, Chicago, IL 60605. Attn James Gregory. Ref #V-L 14656-Z. No Calls. Employer paid ad.

Programmer Analyst (2 openings) (Ref #83596) Plan, develop, test & document computer programs applying knowledge of programming techniques & computer systems, evaluate user requests for new or modified programs to determine feasibility, cost & time req'd, compatibility with current system & computer capabilities, consult with users to identify current operating procedures & clarify program objectives, formulate plan outlining steps req'd, to develop program using structured analysis & design, convert project specifications using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer, apply knowledge of computer programming techniques & computer language; analyze, develop, enhance & customize integrated manufacturing system budget & forecasting system, branch sales system, including redesign of its modules, database modifications, system reengineering & system testing, administer production database & provide customer support, and using each of the following: IBM 3090, Honeywell Mainframe, VAX, IBM PC compatibles, UNIX, XENIX, MVS, AIX, VMS, DOS, Novel Netware, SUPER LAYER, PRO-IV, PRO-ISAM, C, COBOL, [illegible], UNIFY & MS-PROJECT. Req: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed & exp. 2 yrs exp in the job offered or 2 yrs related exp such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Systems Executive. Will accept 3 yrs college ed plus 3 yrs exp in the job offered or in related occup in lieu of the req'd ed & exp. Must have some related exp including design & software development & using each of the following: IBM 3090, COBOL, PRO IV, Superlayer & MVS. $50,780/yr, 40 hrs/wk, 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Refs. Employer Paid Ad

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SYSTEMS ENGINEER required. Analysis, design & development of networking software on UNIX & Windows platforms using C, TCP/IP suite of protocols, OSI (Open Systems Interconnection) networking models defined using ASN 1 (Abstract Syntax Notation), protocol definition languages, X.400 based message switches & protocol compiler development using lex & yacc. Bachelors degree or its equivalent required in Math, Computers or Engineering, plus 2 years experience in the job duties described above. Experience must include analysis/design of distributed networking software on Windows NT platforms using C++, object oriented methods & client-server software development techniques. Must have proof of legal authority to work in the U.S. Salary: $40,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. JO #TX7505293. Ad paid by An Equal Opportunity Employer

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SOFTWARE ENGINEER (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m., $50,000/yr. Carry out the systems analysis, systems design, coding and testing of software application systems on IBM or ICL mainframe environment utilizing IDMS and COBOL. Req: bachelor's degree in Computer or Electronics or Mechanical Engineering. Req: 4 yrs. exp. in job offered or 4 yrs. exp. in Systems Analysis &/or Programming &/or S/W Engineering &/or Computer Consulting. Req: work exp. in dev. of s/w systems on IBM or ICL m/f environment and with IDMS and COBOL. Employer is a s/w development/consulting firm. Relocation to client sites throughout U.S. for periods of 6 mos. to 2 yrs required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 72196

Software Engineer - Design develop & implement software systems for accounting functions. Analyze, design, develop & maintain software application programs. Prepare specifications, code, test, debug, implementation & documentation of systems & procedures using CICS COBOL II SDF ENDEAVOR ADW 2.7.02, XDB, Microfocus COBOL, IEW INGRES-SQL, SPUFI, QMF, DB2, Expediter, TPX and NDM. Bachelors in Comp. Sci., Mathematics or Accounting Requires 2 yrs exp as Software Engineer or Programmer/Analyst which must include 1 yr of exp designing software systems for accounting applications using CICS, COBOL II, SDF, ENDEAVOR, ADW 2.7.02, XDB, Microfocus COBOL, IEW, INGRES-SQL, SPUFI, QMF, DB2, Expediter, TPX and NDM. 40 hrs/wk, 9-5 p.m. $48,434/yr. Refer to JO# 9056896. Resume to PA Job Center, 1931 New Hope Street, Norristown, PA 19401

SOFTWARE ENGINEER (2 positions) 40 hrs/wk, 8 a.m. - 5 p.m. $48,000/yr. Carry out the systems analysis, systems design, coding and testing of software application systems for manufacturing applications on IBM or ICL mainframe environment utilizing IDMS and COBOL. Req: bachelor's degree in Computer Science or Electrical or Mechanical Engineering. Req: 3 yrs. exp. in job offered or 3 yrs. exp. in Systems Analysis &/or Programming &/or Engineering &/or Computer Consulting. Req: work exp. in dev. of s/w systems on IBM or ICL m/f environment and with IDMS and COBOL. Employer is a s/w development/consulting firm. Relocation to client sites throughout U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 72196

Consultant, 40hrs/wk, 9am - 5pm, $47,000/yr. Design, develop, implement & test software applications for management information systems, using client/server & object-oriented technology. Tools: AS/400, RPG/400, AS/SET, BPCS, SQL/400, Datamind, NEXGEN, CL, QUERY, BS in Computer Science or Electrical Engineering as well as two years experience in job offered or as Software Engineer required. Previous experience must include: BPCS, AS/SET, RPG/400, SQL/400, CL, QUERY. Must have proof of legal authority to work permanently in the U.S. Send resume to: Cathy Sutton, WHITTMAN-HART, INC., 311 S. Wacker Dr., Ste. 3500, Chicago, IL 60606 (312) 913-3433

Programmer/Analyst. Research design & develop management software systems. Develop & direct system testing, programming & documentation. Develop on-line programs using MVS/VS, JCL, SDF/BMS/CICS, DB2, SQL, CEDF, DG Relational Database, IDMS & Cassirol Analyze data processing requirements, prepare E-R diagrams, database design, & program specifications reports. Bachelor's in Comp. Sci. or Engg. Requires 2 yrs. exp. in job offered or engineering which must include 1 yr. exp. developing management software systems with MVS/VS, JCL, SDF/BMS/CICS, DB2, SQL, CEDF, DG Relational Database, IDMS & Cassirol. 40 hrs/wk, 9-5, $48,434/yr. Refer to JO #2005304. Resume to PA Job Center, 1931 New Hope Street, Norristown, PA 19401

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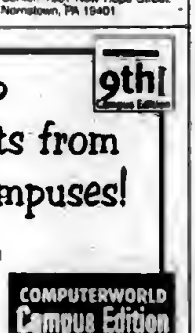


Issue Date: Oct. 31, 1996
Close: Sept. 18, 1996

Regional Scope: Philadelphia/South N.J.

SAP central

By Leslie Goff

With manufacturing, insurance and financial services companies dominating the region and the proximity of SAP America, Inc. in neighboring Wayne, Pa., SAP implementations are driving much of the IS employment in the Philadelphia/South New Jersey area.

"We have no problem finding SAP talent here," says Liz Corey, human resources manager at Price Waterhouse. "You can never find enough. But here — unlike any other market in the country — you can run an ad for SAP professionals and get qualified responses."

Philadelphia Convention & Visitors Bureau

Demand for Internet skills is also strong, given that the area's manufacturers are examining how they can use the World Wide Web to expand product distribution channels, Corey says. Mainframe skills seem to be in short supply in the region. Richard Levy, president of the Data Processing Management Association's (DPMA) Philadelphia chapter and lead programmer/analyst at the Federal Reserve Bank of Philadelphia, says he gets one or two calls per week from recruiters seeking contract mainframe programmers.

IS avoids downsizing

The area's information systems departments are staffing up across the board, Corey says. Manufacturing has been losing jobs steadily in Pennsylvania since the 1980s. Because IS has often driven this downsizing, IS employment hasn't been affected, Corey says. Service employment has been rising consistently in the same time period, according to the Pennsylvania State Data Center in Harrisburg. Overall, service jobs grew an estimated 7% between 1991 and 1995.

Price Waterhouse plans to increase its local staff of 200 external IS technical consultants by about 40, or 22%, Corey says. "In terms of our hiring needs, when we fill that number, my boss will be ready for us to hire 40 more," she says. The company's clients include chemical company FMC Corp., cable television operator Comcast Corp., United Parcel Service, Inc. and The Prudential Insurance Co. of America.

Of the metropolitan areas on the Eastern seaboard, Philadelphia/South Jersey is one of the more livable. The City of Brotherly Love "is one of the most laid-back cities in the Northeast," Levy says.

Distinct in its own right

South Jersey is decidedly more than just a suburban extension of Philadelphia. The area has its own character that is distinct from Philadelphia's and that of North Jersey, says James Siano, president of the DPMA's South Jersey Chapter and PC coordinator at a major defense contractor in Blackwood, N.J.

"There is definitely a different attitude between North and South Jersey," Siano says. "It's like there's an imaginary line that runs through Trenton, and it's analogous to the Mason-Dixon line. Everything changes when you cross it. Once you're into North Jersey, you may as well be in New York."

South Jersey is marked by the Atlantic shoreline on the East, mountains to the West and sprawling pineland in between.

Manufacturing dominates local industry, with pockets of tourism-related firms along the shore. Siano says three casinos are set to open in Atlantic City, "and there's definitely a growth in IS jobs down there." ■

Goff is a freelance writer in New York.

Finding fertile ground in Philly

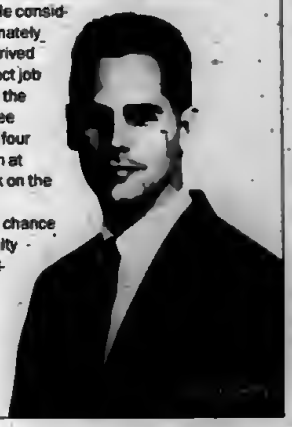
After he had worked four years in public relations, Jim Johnson hankered to work in the field that was his first career choice: information systems.

The 31-year-old Alabama native had a bachelor's degree in computer science but went into PR because of a soft IS job market in Birmingham, Ala., where he moved after college. A transfer last year to Meridian, Miss., prompted Johnson to think about the direction his career was taking, he says. He determined that if he were ever going to join the ranks of IS, it was now or never.

After a year and a move to Philadelphia, Johnson is a network administrator who supports 200 users at Price Waterhouse's Global SAP Training Center. In his adopted city, he eats a lot of Italian food, goes down the shore (local slang for going to the beach) and loyally attends Phillies baseball games — at least, whenever the Braves are in town.

"It seems the job market is pretty strong here," Johnson says. He lives in southern New Jersey and commutes to Philadelphia by express train. "The people are different — maybe a little louder. They like to talk about hockey, and I haven't managed to get into that yet. Hockey is not a big sport in the South."

Johnson launched his job search in Birmingham, but the opportunities he found there were few and low-paying. He considered Atlanta, but at a friend's urging, ultimately decided to relocate to Philadelphia. He arrived in town last May and easily found a contract job repairing PC hardware to see him through the transition period. In August, after only three months of job hunting, Johnson garnered four IS job offers. He chose a contract position at Computer Aid, Inc. in which he would work on the external help desk at SAP America.



"I picked that job because it gave me a chance to use my PR skills and also the opportunity to develop the hard technical skills I needed," Johnson says. His strategy paid off: He landed his new job at Price Waterhouse in May largely because of his SAP experience and his end-user support background. — *Leslie Goff*

Getting connected

Local associations for IS professionals

DPMA Philadelphia Chapter
Contact: Richard Levy, president, (215) 574-4302
E-mail: dpmaphil@libertynet.org

DPMA South Jersey Chapter
Blackwood, N.J.
Contact: James Siano, president, (609) 227-4003

Society for Information Management Philadelphia Area Chapter
Membership encompasses Philadelphia and South Jersey; limited to senior IS executives
Contact: Patricia A. Brown, administrator, (215) 836-2016
E-mail: simphila@aol.com

Macintosh Business Users Society, Philadelphia
Contact: Doug Beer, (215) 464-6600
E-mail: macbus@libertynet.org or MacBUS@aol.com
World Wide Web: libertynet.org/~macbus/

Pennsylvania Innovation Network
Malvern, Pa.
(610) 647-6633
E-mail: pin@libertynet.org

Online resources

USA CityLink: Pennsylvania
www.usacitylink.com/citylink/pa.html

City.net: Philadelphia
www.city.net/countries/united_states/pennsylvania/philadelphia

LibertyNet: Home Page of the Philadelphia Region
www.libertynet.org/

Bristol-Myers Squibb Company

Information Management Opportunities

Bristol-Myers Squibb, a research-based, diversified health and personal care company, has exceptional opportunities available in its Lawrenceville, Plainsboro, and New Brunswick, NJ facilities for individuals to join the Pharmaceutical Group Information Management organization

CLIENT SERVICES

Provide Local Area Network (LAN) installation, planning, administration and support to our Pharmaceutical Group clients

Information Management Analysts

The selected candidates will have superior knowledge of NetWare 3.x, 4.x and Windows/NT server environments, NetWare CNE and Windows/NT certification preferred. Extensive knowledge of PC applications (WordPerfect, Lotus 1-2-3, MS Office, Freelance Graphics, Irma 3270, DOS Memory Management, Windows 3.1, Windows 95, Windows/NT and Windows-based applications) is also required. Knowledge of Wide Area Networking (WAN), TCP/IP communications and Novell NetWare for SAA Gateways is preferred.

INFORMATION ARCHITECTURE

Join the Pharmaceutical Group Data Warehouse which is responsible for environmental and database support of warehouse development, staging and production systems. Some worldwide travel will be necessary (10%).

Sr. Oracle Database Administrators

B.S. required with 5-10 years of experience as an Oracle Database Administrator and 2-4 years experience in Data Warehouse applications supporting very large databases (VLDBs) in excess of 200 gigabytes. Selected candidates must have expert knowledge in Oracle database administration and development using Oracle 7.2 in a data warehouse environment that exceeds 200 gigabytes. Candidate should be a specialist in installing, configuring, tuning, troubleshooting and optimizing complex Oracle systems involving Replication, Parallel Server, Parallel Processing and Query, Query and Index in a data warehouse environment. Knowledge of HP UNIX operating system and HP hardware a plus.

Oracle Database Administrators

B.S. required with 2-5 years of experience as an Oracle Database Administrator and experience in Data Warehouse applications supporting very large databases (VLDBs) in excess of 200 gigabytes. Selected candidates must have experience in Oracle database administration and development using Oracle 7.2 in a data warehouse environment that exceeds 200 gigabytes. Candidate should have a solid understanding of storage optimization techniques, such as data partitioning and striping. Must have the ability to troubleshoot performance problems. Knowledge of HP UNIX operating system and HP hardware a plus

GLOBAL SALES and MARKETING SYSTEMS

Join the team building the next generation of information systems which will support our Global Sales & Marketing organizations into the 21st century.

Business Solution Architects

Working in a dynamic, team-based environment, the selected candidates will have excellent analytical, conceptualization, and problem-solving skills. They will be able to understand and articulate business needs and requirements to architect information technology solutions. Familiarity with formal information system development methodologies, business process reengineering practices, and organization change management techniques is required. Knowledge of emerging technologies including Inter/IntraNet, Data Warehousing and data mining, mobile computing, decision support and on-line analytical processing systems is a plus. Extensive knowledge of sales and marketing business processes and the pharmaceutical industry, as well as excellent interpersonal skills, are assumed.

Technical Architects

B.S. required, M.S. or MBA preferred, with 8-10 years of experience, global experience a plus.

The selected candidates will have superior technical skills and hands-on experience in developing client-server and Inter/Intranet applications, as well as superior knowledge concerning component based application design and building, data warehousing, project management, methodology, and be motivated by challenging assignments in a team oriented environment. Candidate will be responsible for establishing technical environment and directing application building and testing. Specific technologies include PowerBuilder, Windows, Oracle, Cognos, UNIX, C, Business Objects, OLAP, HTML, and Java. Some worldwide travel necessary (10%).

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	Proactive Recruitment Techniques
12:15 p.m.	Luncheon Keynote
	Repeat of Concurrent Sessions
	Town Hall Forum
6:00 p.m.	Program ends

Proactive Recruitment Techniques
Dave Drugman, President, Bay Cities Research, Inc.
To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

Industry Trends
Luncheon/Keynote Address
Maryfran Johnson, Executive Editor, Computerworld
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Gary Cluff, President, Cluff and Associates
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- ORACLE/DB2
- UNIX

The qualified individuals will have experience with Internet database products (World Wide Web, Mosaic, Netscape), application development in Windows and Visual Basic, and should be familiar with Electronic Mail automation (listservers), familiarity with database and text retrieval systems a plus.

We additionally seek Sr. Programmer Analysts and Section Managers to work at higher levels of programming and/or project management. These positions require 4 to 8 years experience in project management, some supervisory experience and knowledge of emerging technologies.

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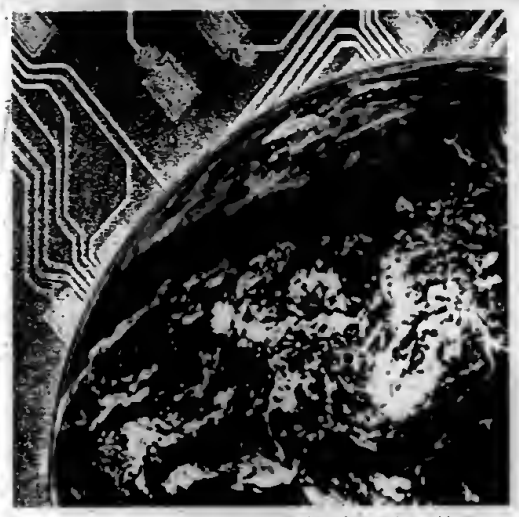

Lockheed Martin has a long and proud heritage at its Camden, NJ site located on the Delaware River directly across from Penn's Landing in Philadelphia. From the invention of talking movies to state of the art communication systems on the Space Shuttle and Trident Submarines and the development of the most current engineering design tools and processes, Camden employees have made enormous contributions to commercial, government and defense technology. Three of our Camden businesses have opportunities for individuals who are tenacious and filled with ingenuity, willing to work together on superior teams to keep us ahead of the competition.

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ATL is a small, elite group of advanced computer-technology labs staffed by nearly 80 scientists and engineers, most of whom hold advanced degrees and possess uniquely diverse, pure-and applied-research credentials. We apply advanced computing technologies to the operating companies of Lockheed Martin Corporation creating products which range from microelectronics devices to advanced air-defense systems. We also contract to various defense agencies and military services, and use Corporate-sponsored independent R&D to craft our technological base. Requirements exist in the following disciplines for individuals with BS degrees (MS preferred), and 2 to 10+ years experience.

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- Artificial Intelligence
- Embedded Signal Processing
- Signal Processing Architecture/Design Tool Expert
- Enterprise Technology/Design Environment
- INFOSEC

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- DSP Agorithm and Implementation
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- MLS Networks/Operating Systems
- UNIX Internals
- OO Design/Development
- Telephony
- COTS Product Integration
- Product Field Support
- INFOSEC
- Systems Simulation/Design (VHDL/Mentor Tool Sets)

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• 2+ years experience in DB2 and IMS. Proficient in JCL and VSAM. **Position #2**

• 5-7 years programming and systems development/support. Experience with medium to large mainframe systems. Proficient in JCL, TSO, COBOL and IMS DB/DC. Visual Basic coding is a plus. **Position #3**

• Skilled in UNIX, NT, OS/2, TCP/IP and Client/Server Communications. Experience with Oracle, SQL, SYBASE, DB/2 a plus. **Position #4**

LEAD PROGRAMMER/ANALYST

• Knowledge of Tandem systems with TAL or C. Development experience. Development in real time transaction processing environment. Working experience with a RDBMS system on a non-PC platform. **Position #5**

• Minimum 5 years experience developing large scale business applications. Strong mainframe IMS background. Knowledge of AS400, RPG and CL preferred. **Position #6**

PROGRAMMER ANALYST

5+ years Windows and 2-3 years PowerBuilder experience required. Must have working knowledge of Oracle, DB2, Novell Netware, WAN and OLE. Experience with CASE tools is a plus (S-Designer, ERWIN, ADW). **Position #7**

PROGRAMMER ANALYST

• Development, installation, support and maintenance of CIS Systems to support Credit Review, Credit Policy and Credit Information Systems in Paradox. Gather user requirements, develop logical models, define technical specifications. Coding and testing is required.

• Minimum of 5 years experience developing relational database applications. Knowledge of Paradox, VB, PowerBuilder or Delphi; Object Oriented Pragmas, Windows, PC, LAN, WAN, Hoteling; Spread Sheets, Statistics, Communications Packages and other "off the shelf" packages required. Self-starter, able to work independently to support team effort. Good communication and presentation skills. Degree required. **Position #8**

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Requires thorough knowledge of PC/LAN software/hardware, Novell Netware, DOS, Windows, OS/2 as well as experience in troubleshooting and resolving PC/LAN problems. **Position #9**

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Systems design, development and implementation in a Windows NT/Oracle/MS Visual Basic 4.0 environment. Experience in VB 4.0, Oracle, MS Visual C++, Windows NT TCP/IP. **Position #10**

CLIENT/SERVER PROGRAMMER/ANALYST

Development of applications and image-related products in a Windows NT/Oracle/MS Visual Basic 4.0 environment. Must have experience in MS Visual Basic 4.0, distributed relational database development, user interface design. MS Visual C++ and Java experience a plus. **Position #11**

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The systems group for International Banking and Capital Markets Trading has opportunities for developers with 3 to 5 years experience on PC/LAN and mid-range computers. Experience with GUI tools such as Visual Basic or Powerbuilder using MS SQL Server, Access or BTRIEVE is needed for the LAN teams. The mid-range development is on IBM Advanced Systems using Client Access/PC Support, with SAA COBOL and RPG IV. There are openings on each of the following teams.

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- Unix System Administrators (SunSolaris, HP/UX or AIX)
- Network Administrators (LAN/WAN configuration in a TCP/IP environment)

Working Mother's Best Places to Work 96

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In this lead role, you'll serve as an IS consultant who has an understanding of critical business issues and a broad knowledge of all the technologies to formulate solutions to achieve unique, mission-critical needs. To qualify, you must have a Bachelor's degree in Computer Science, Business or related discipline and project management certification. At least five years relevant experience with large, complex technology assessments and designs is required. Behavior skills such as interviewing, technical proposal writing and negotiation are critical with knowledge of information engineering and participative project management methods a must.

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PROGRAMMER/ANALYSTS

We are currently seeking Programmer Analysts for a various opportunities in our MIS Department. Qualified candidates will have 3-5 years COBOL/CICS, DB2 (or SQL) and VSAM experience. Financial/Customer Service/Marketing/Merchandising knowledge a plus. In addition, some positions require C and COBOL development experience for VRU application and Oracle/Informix experience and working knowledge of UNIX.

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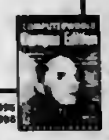

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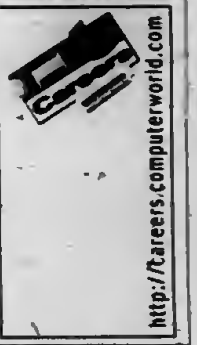

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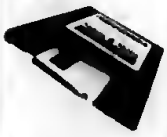

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Marketplace

Selecting an Internet service provider

Internet service providers come in all shapes and sizes. They include small, regional firms that have a handful of modems and a few employees and national providers that offer high-speed connectivity and a host of consulting and support services.

By Suzanne Hildreth

Which Internet service provider is right for your company? *Computerworld* spoke with four Internet experts, who offered their suggestions on key factors to consider:

Joel Maloff
The Maloff Co.
Dexter, Mich.

Daniel Dern
Dern Associates
Newton, Mass.

Chris Stevens
Aberdeen Group, Inc.
Boston

Tim Sloane
Aberdeen Group

Q: What should the main considerations be when selecting an Internet service provider?

Stevens: Decide what you want to accomplish with an Internet connection. Are you looking for electronic-mail capability? Are you interested in enabling employees to browse the Internet? Or are you looking to put up a [World Wide] Web site? If you have more than one goal, you may want to have two [service providers].

Dern: Remember that if something's too cheap, there's got to be a reason for it. The cost of your Internet access is only a fractioo of your total Internet costs. There are other expeoses, such as phone lines, a local router, software, network administratioo and so forth. Your Internet provider may be the wrong plase to try to save a few dollars or even a few thousand dollars.

Maloff: Keep in mind that there is no single type of Internet-access provider. There are the national or international backbone networks, which have physically built their own connectivity and have their own nodes. Then you have the Internet resellers that purchase Internet connectivity from a national provider auo sell service to their local area. You also have the online services like America Online, phone companies like AT&T and computer companies like Microsoft, all offering Internet access. You need to find out how many points of connection to the Internet, through how many other providers, they have. If a provider has only one T1 line to Sprint, it's not a good sign.

Q: How can you ensure your Internet service provider will have sufficient connectivity and bandwidth to handle all the customers it services?

Dern: Find out what plans they have for future upgrades. Because if they don't have a plan, within six mootha they're going to be saturated, unless they already have an OC3 backbone. Assume that no matter how much service you buy initially, you'll want a lot more, a lot sooner than you think.

Stevens: If you're talking dial-in access, ask about the ratio of users to modems. A 10-to-1 ratio is probably optimal. Also, ask if they have cold servers standing by to take over if one of their regular servers fails. If they're hosting your Web site, make them guarantee bandwidth so heavy traffic on another site doesn't block access to yours. The larger [providers] will do that; if it's a smaller one that can't guarantee bandwidth, you might bring in your own standalone server. Also, check to make sure they maintain a good schedule of backups. Daily backups can prevent an inconvenience, like an inadvertent deletion of files, from turning into a disaster.

Q: How should you evaluate the service and support of a provider?

Dern: Ask them if they've worked with other companies in your industry. If they have, they'll be more familiar with the applications you're going to run. It also doesn't hurt to ask for references.

Sloane: After you've narrowed it down to a couple of providers, I'd suggest paying them to come in and consult with you for a half-day or so about the specifics of your situation. You need to discuss the size of your database, the number of hits you expect to have on your Web site, which applications you're going to be running, how often you need backups done and so forth. Obviously, if you have trouble just getting them to come in and talk to you, that'a a good indication that you're not going to be getting adequate service down the road.

Maloff: Try calling them at 3 p.m. on a Saturday or at 11 p.m. on a Monday. Does anybody anawer the phone, or do you get a recording? That'a the first step, because cyberspace is a 24-hour-a-day business. ■

Hildreth is a freelance writer in Boston.

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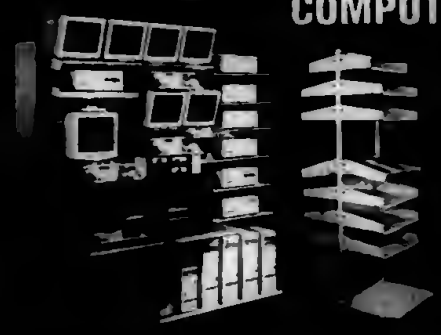

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Next week: What happens when your firm goes public?

Venture capitalists, who spend their lives deciding which high-tech start-ups to sink their money into, say people and markets are more important than technical wizardry

Technology takes a backseat

By Rosemary Cafasso

When five major venture capital firms were recently asked to list the main factors they look for in a high-tech investment, oot a one mentioned technology first.

Instead, they stressed studying the company's management team and its market potential when evaluating possible investmehts.

Mark Stevens, a general partner at Sequoia Capital in Menlo Park, Calif., values market potential above all else.

"You can swap people in or out of a start-up or adjust the technology or fioancing strategy," Stevens says. "But the market is the market. A start-up can't create a market."

Yet market potential is extremely difficult to pin down. The best approach is to become a student of the industry. By learning about technology and markets, you can spot trends.

"The analogy I use is surfing," Stevens adds. "Companies get up too late and the wave is over the top. Or they get up too early and they are waiting for a big wave that doesn't come."

One case of good timing was Sequoia's investment in Yahoo (Nasdaq: YHOO), maker of the popular Internet search engine. Sequoia got in early enough, making its investment more than a year ago. But with the current explosion of Internet search tools and technologies, "you wouldn't fioance a search engine company today," Stevens says.

Another important factor is the company's top managers. Remember to look at not only what they've accomplished in their careers, but also what they've accomplished in their lives, venture capitalists note.

"At the end of the day, it is a lot about being a good judge of character," says Rob Soni, East Coast manager of technology investments for Bessemer Venture Partners in Wellesley Hills, Mass.

Jean Malaney

After evaluating the management, market and technology, *sometimes it just comes down to good instincts, says venture capitalist Jennifer Gill Roberts*

Judging entrepreneurs is often difficult because many are so young, particularly in the hottest areas, such as the Internet market, notes Jim Swartz, a managing partner at Accel Partners in Princeton, N.J. The company was an early investor in hotshot Arbor Software Corp. (Nasdaq:ARSW), a maker of decision-support software.

"You look for someone who is driven and very focused," Swartz says. "They all have a history of accomplishing something — even a paper route."

The third step in evaluating a high-tech investment is the product. At a minimum, there must be something innovative about a company's offering. Or, in the lingo of venture capitalists, it must be a "defensible technology."

But that doesn't mean competitors won't copy the technology eventually, says Jennifer Gill Roberts, a general partner at Sevin Rosen Funds in Dallas. The key is to make sure the product has a 12-month lead on potential competitors.

The final step in evaluating a potential investment is to check your intuition. Some venture capitalists admit that their choices are shaped by a gut feeling, fine-tuned by years of studying markets, technologies and human nature.

"Sometimes it comes down to good instincts," says Roberts, whose firm helped propel Lotus Development Corp. and Compaq Computer Corp. (NYSE:CPQ) to fame and fortune in the 1980s. "Until you've done this for a while and have seen the outcome of your bets, you won't know how good you are." ■

Cafasso is a freelance writer in Walpole, Mass.

Red flags

For every successful high-tech investment, there's a string of losers. Here are some factors that would scare off a venture capitalist:

- **A dysfunctional management team. Hint: They don't communicate or they appear to not like one another** – *Sevin Rosen Funds*
- **A technology that can be quickly and easily copied or imitated** – *Sevin Rosen Funds*
- **Companies with an overreliance on secrecy** – *Accel Partners*
- **Companies touting magic black boxes that won't let you see what's inside** – *Accel Partners*
- **Companies that require more than $200 million to really take off** – *Sequoia Capital*

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Best Price/Performance	Microsoft (Visual Basic)
Best Service/Support	IBM (Cobol)
Best Documentation	Microsoft (Visual Basic)
Prefer To Do Business With	Microsoft (Visual Basic)

4GLs

Best Technology	Oracle (Developer 2000)
Best Price/Performance	Sybase/Powersoft (PowerBuilder)
Best Service/Support	Oracle (Developer 2000)
Best Documentation	Oracle (Developer 2000)
Prefer To Do Business With	Oracle (Developer 2000)

CASE

Best Technology	Oracle (Designer 2000)
Best Price/Performance	Oracle (Designer 2000)
Best Service/Support	Oracle (Designer 2000)
Best Documentation	Oracle (Designer 2000)
Prefer To Do Business With	Oracle (Designer 2000)

Configuration Management Tools

Best Technology	Microsoft (SQL Administrator)
Best Price/Performance	Microsoft (SQL Administrator)
Best Service/Support	IBM (AIX SDE Workbench/6000)
Best Documentation	Microsoft (SQL Administrator)
Prefer To Do Business With	Microsoft (SQL Administrator)

Database Management Systems (DBMS)

Best Technology	Oracle (Oracle 7 Series)
Best Price/Performance	Microsoft (Access)
Best Service/Support	IBM (DB/2)
Best Documentation	IBM (DB/2)
Prefer To Do Business With	IBM (DB/2)

Object Database Management Systems (ODBMS)

Best Technology	Hewlett-Packard
Best Price/Performance	Hewlett-Packard
Best Service/Support	Hewlett-Packard
Best Documentation	Hewlett-Packard
Prefer To Do Business With	Hewlett-Packard

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Best Documentation	Digital Equipment Corp.
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Applix Inc.	15.6	Borland Int'l Inc. (L)	-20.7
Security Dynamics Tech.	12.4	Business Objects	-20.5
Retix	13.1	Interleaf Inc. (L)	-17.3
Network General	10.8	Red Brick Systems Inc.	-17.0
Intelligent Electronics	10.6	Microcom Inc.	-16.7

DOLLAR

Gainers		Losers	
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Systemsoft Corp.	4.88	Business Objects	-8.75
Group I Software	6.75	Digital Equipment Corp.	-6.63
Applix Inc.	4.38	Red Brick Systems Inc.	-6.25
Xylan Corp.	4.00	Sybase Inc. (L)	-5.75
Computer Associates	3.25	Arbor Software	-5.25
Paychex (H)	2.88	Hewlett Packard Co.	-4.88
CompUSA Inc.	2.75	ParcPlace Systems Inc.	-3.63

Industry Almanac

Great expectations

The trouble with stocks that have a stellar track record is everyone expects their performance to always be out of this world.

That's the enviable plight of **Hewlett-Packard Co. (NYSE:HP)**. In May, when HP announced its fiscal second-quarter earnings of $1.37 per share, its stock fell 7%. Though the earnings were up 25% from the same quarter last year, they weren't as good as the $1.40 to $1.45 analysts had expected.

But that was a short-term aberration. Many analysts say HP is and will continue to be a strong and steady stock.

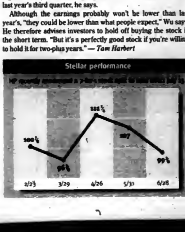
Stephen C. Dube, an analyst at Wasserstein Perella Securities in New York, rates it a buy. HP is diversified, with strong positions in many markets, he points out, and it has maintained good revenue growth. The vendor also has just introduced a series of workstations based on the PA8000 RISC microprocessor that is expected to sell well this fall.

Dube says the stock, now hovering around $100 per share, could hit $135 within a year. Mona Eraiba, senior vice president of research at Gruntal & Co. in New York, has similar expectations. She says the stock could appreciate at least 30% over the next six to 12 months.

Yet David Wu, a computer analyst at Chicago Corp. in New York, warns that the stock could take another hit when quarterly earnings are reported this month. HP's third-quarter earnings for this year may not represent much of an increase over last year's third quarter, he says.

Although the earnings probably won't be lower than last year's, "they could be lower than what people expect," Wu says. He therefore advises investors to hold off buying the stock in the short term. "But it's a perfectly good stock if you're willing to hold it for two-plus years." — *Tom Harbert*

Stellar performance



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AIT	86.88	44.00	Ameritech Corp	50.50	0.50	0.8
AXE	22.13	14.38	Anixter Intl. (L)	14.50	-0.50	-3.3
APTS	13.13	2.75	Apertus Tech.	3.50	0.50	1.8
T	50.88	53.38	AT&T	61.13	-1.00	-1.6
ASND	71.75	13.25	Ascend Communications	58.75	0.88	1.8
BNYN	34.13	6.00	Banyan Systems Inc.	7.25	0.25	3.6
BAY	50.00	24.63	Bay Networks Inc	26.75	0.75	5.9
BEL	80.50	43.50	Bell Atlantic Corp	63.75	0.25	1.2
BLS	45.88	31.00	Bellsouth Corp.	43.23	1.13	2.7
BRKT	32.75	6.63	Brooktrout Technology	24.50	-2.38	-8.3
CS	82.75	88.63	Cabletron Systems	69.50	1.25	1.8
CSCC	76.75	13.13	Cascade Communications (H)	70.75	2.25	3.3
CGRM	75.13	11.75	Centigram Communications	14.63	-1.50	-6.4
CSCO	59.13	24.25	Cisco Systems Inc. (H)	57.63	0.75	1.3
CLIX	11.38	4.50	Compression Labs Inc.	6.19	0.44	2.6
CMNT	13.75	4.88	Computer Network Tech.	7.38	0.25	3.5
XCOM	34.50	8.25	CrossComm	10.75	0.38	4.0
DIGI	64.00	21.88	DSC Communications	29.75	-0.50	-2.7
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MNPI	36.38	10.00	Microcom Inc	10.63	-2.13	16.7
NETM	34.00	9.38	NetManage Inc.	11.13	0.38	0.0
NTRX	30.88	3.63	Netrix Corp	9.00	0.00	0.0
NCDI	12.00	2.88	Network Computing Devices	4.38	-0.69	-15.6
NWK	42.00	19.38	Network Equipment Tech.	21.00	-0.25	-1.2
NETG	27.63	12.38	Network General	24.38	2.50	10.8
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ASTA	16.88	4.63	AST Research Inc.	6.88	0.00	0.0
CPQ	56.75	35.88	Compaq Computer Corp	49.00	-0.13	-0.3
DELL	57.25	21.00	Dell Computer Corp	48.88	-2.13	-4.5
GATE	41.30	38.00	Gateway 2000 Inc.	33.94	0.44	1.3
HWP	313.38	70.00	Hewlett Packard Co.	94.38	-4.88	-4.9
MUEI	19.86	9.00	Micron International Inc.	11.50	-0.69	-5.6
NIPNY	75.15	52.75	NEC America	16.25	0.25	0.5
SGI	45.63	21.13	Silicon Graphics	24.25	0.00	0.0
SUNW	67.13	19.75	Sun Microsystems Inc.	57.50	-1.63	-2.8

AMH	13.50	6.75	Amdahl Corp	9.94	-0.31	-3.0
DGN	19.13	8.13	Data General Corp	11.73	-1.50	-10.5
DEC	76.50	35.13	Digital Equipment Corp	35.25	-6.63	-14.4
IBM	128.88	83.13	IBM	99.13	-0.13	-0.1
MDCD	20.25	5.13	Meridian Data Inc.	8.25	-0.25	-2.8
NETF	2.50	5.88	NetFrame	4.25	-0.13	-2.9
SQNT	25.38	10.13	Sequent Computer Sys.	13.63	0.13	0.9
SEQS	19.00	2.88	Sequoia Systems Inc.	3.00	0.00	0.0
SRA	36.13	23.00	Stratus Computer Inc.	28.00	-2.13	-7.1
TDM	17.50	8.50	Tandem Computers Inc.	11.00	-0.25	-2.2
TRCD	7.56	2.00	TriCord Systems	4.06	-0.56	-12.2
UIS	33.00	3.50	Unisys Corp	6.25	-0.13	1.8

ADBE	74.23	30.00	Adobe Systems Inc	35.63	-0.13	-0.3
ANSWA	8.25	3.63	American Software Inc.	4.75	0.13	2.7
APLX	42.50	8.25	Applix Inc.	32.38	4.38	15.6
ARSW	82.75	28.75	Arbor Software	54.00	-5.25	-8.9
ADSK	53.00	27.75	Autodesk Inc.	29.30	-0.38	-1.3
BACH	11.88	4.63	Bachman Info. Systems	6.23	-0.63	-0.1
BGSS	50.00	29.75	BGS Systems Inc.	50.00	0.00	0.0
BMCS	67.75	32.38	BMC Software Inc.	38.19	-1.44	-5.4
BOOL	26.75	19.25	Boole and Babbage	23.25	-0.08	-0.3
BORL	21.25	2.19	Borland Int'l Inc. (L)	7.19	-1.88	-20.7
BOBJY	55.50	15.88	Business Objects	32.00	-8.75	-20.5
CYE	57.88	14.13	Cheyenne Software Inc.	19.25	-0.25	-1.3
COGNF	57.38	9.00	Cognos Inc.	22.75	-0.15	-0.5
CA	82.13	37.25	Computer Associates	72.38	3.25	4.7
CVN	15.50	6.25	Computervision Corp	50.25	-0.38	-3.5
CPWR	50.75	75.50	Compuware Corp	37.38	-1.73	-4.5
CSRE	32.00	13.63	Comshare Inc. (H)	31.50	2.38	8.8
COSFF	19.50	8.38	Corel Corp	9.69	-0.69	-6.6
DWTI	15.75	5.25	Dataware Technologies Inc.	5.88	-0.13	-2.1
FILE	67.00	38.63	Filenet Corp. (L)	24.65	-31.65	-32.3
DDDDF	8.25	3.56	4th Dimension	6.00	-0.50	-7.7
FTPS	50.63	7.38	FTP Software Inc. (L)	7.50	-0.75	-9.2
GSOF	26.00	7.00	Group I Software	14.25	6.75	84.6
GPTAE	18.50	3.25	Gupta	4.75	0.50	0.0
HUM	28.88	13.25	Hummingbird Comm. Ltd.	17.75	-0.15	-0.7
HYSW	28.38	9.75	Hyperion Software Corp	11.88	-0.38	-3.1
IRIC	16.25	16.00	Information Resources	31.63	-0.50	-6.1
IFMX	50.75	50.88	Informix Corp	24.00	1.63	7.3
INGR	20.13	50.88	Intergraph Corp	11.88	-0.13	-1.0
LEAF	12.65	4.25	Interleaf Inc. (L)	3.38	-3.33	-17.3
ISLI	26.25	8.25	Intersolv Inc.	9.00	-0.63	-6.5
INTU	38.25	36.88	Intuit Inc.	48.00	0.25	0.3
LGWX	22.25	10.88	Logic Works	12.63	-0.60	-4.7
MAPS	37.00	7.50	MapInfo Corp. (L)	11.25	0.75	7.1
MATH	9.75	4.75	MathSoft	5.63	0.00	0.0
MCAF	36.00	12.50	McAfee Associates	51.25	1.00	2.0
MENT	21.88	10.88	Mentor Graphics	15.63	-0.38	-2.3
MFGY	21.25	8.25	Micro Focus	13.50	0.00	0.0
MGXI	38.63	7.63	Micrografx Inc.	14.75	-0.50	3.4
MSFT	125.88	79.88	Microsoft Corp	131.50	3.13	1.8
ORCL	50.38	23.38	Oracle Corp. (H)	38.13	-1.06	-2.7
PMTC	50.50	23.75	Parametric Technology	44.00	0.63	1.4
PARQ	14.63	5.38	ParcPlace Systems Inc	5.50	-3.63	-39.7
PSFT	73.50	26.50	Peoplesoft (H)	71.25	-1.00	-1.4

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PTEC	20.50	6.88	Phoenix Technologies	16.88	0.38	2.9
PSQL	16.63	3.11	Platinum Software	7.81	0.31	4.2
PLAT	26.00	11.75	Platinum Technology	13.63	1.50	0.2
PRGS	38.00	13.88	Progress Software Corp	15.00	-0.61	-4.0
RNBO	26.75	16.88	Rainbow Technologies Inc.	13.75	2.00	10.1
REDB	61.00	29.50	Red Brick Systems Inc.	50.50	-6.25	37.0
ROSS	8.13	5.19	Ross Systems	5.88	0.25	4.4
SCOC	13.13	5.38	SCO Inc.	7.00	0.13	1.8
SDTI	109.00	37.63	Security Dynamics Tech	92.75	10.29	12.4
SKEY	31.75	13.50	Softkey International Inc	50.00	0.00	0.0
SPCO	5.15	2.19	Software Publishing Corp.	5.65	-0.25	-8.7
SQAX	38.75	16.00	SQA Inc.	28.25	0.13	0.4
SOTA	19.75	6.63	State of the Art	19.00	0.25	1.4
SSW	81.38	38.25	Sterling Software Inc.	75.25	-2.13	-0.7
SDRC	37.50	10.38	Struct. Dynamics Research	21.38	-0.75	3.4
SYBS	38.75	13.50	Sybase Inc. (L)	17.50	-5.75	-24.7
SYMC	33.25	8.88	Symantec Corp	11.38	-0.94	-7.5
SNPS	46.75	23.00	SynOpsys	38.13	-0.88	-2.2
SSAX	30.63	12.63	System Software Assoc.	16.25	-0.75	-4.4
SYSF	60.75	8.75	Systemsoft Corp	50.63	4.88	15.7
TRUV	10.13	4.63	Truevision Corp	7.13	-0.13	-1.7
VIEW	17.38	9.63	Viewlogic Systems	13.88	-1.13	-8.0
VMRK	71.50	5.75	VMark Software Inc.	50.63	1.38	16.4
WALK	12.75	5.50	Walker Interactive Systems	10.00	0.00	0.0
WALL	23.75	13.00	Wall Data Inc.	19.25	-2.25	-10.5
WANG	26.13	14.50	Wang Laboratories Inc	19.75	0.75	1.9

AMER	71.00	21.38	America On-Line	44.00	0.13	0.3
BBN	48.75	20.25	BBN Corp	20.75	1.00	-4.8
CSRV	35.50	20.00	CompuServe Corp. (L)	21.25	-0.13	-0.6
LCOS	29.23	8.75	Lycos Inc.	9.75	1.18	12.4
NETC	91.50	19.22	Netcom On-Line	25.30	-1.50	-5.9
NSCP	87.00	52.88	Netscape Comm. Corp.	61.25	-0.63	-1.0
PSIX	29.00	6.75	PSINet	11.12	0.00	0.0
QDEK	39.50	7.88	Quarterdeck Corp	9.38	0.00	0.0
RAPT	38.75	19.75	Raptor Systems	50.50	0.50	1.0
SCUR	64.50	19.00	Secure Computing Corp	22.75	-0.75	-1.5
SPYG	61.00	14.75	Spyglass Inc.	31.00	0.25	3.2
UUNT	98.75	54.75	UUNET Tech.	65.23	-0.75	-0.4
YHOO	43.00	18.25	Yahoo! Inc. (L)	20.50	0.25	1.2

AMD	36.50	12.50	Advanced Micro Devices (L)	13.63	0.00	0.4
ADI	30.13	17.50	Analog Devices Inc	25.50	-0.13	-0.5
CHPS	15.88	7.88	Chips and Technologies	19.88	0.38	5.1
CRUS	61.13	13.88	Cirrus Logic	16.94	-0.69	-3.9
CY	27.75	10.00	Cypress Semiconductor Corp.	13.25	0.50	4.3
CYRX	59.75	13.63	Cyrix	27.63	0.38	3.5
INTC	78.38	40.51	Intel Corp	74.88	1.50	1.9
LSI	62.50	22.50	LSI Logic Corp	75.25	-0.88	-3.3
LSCC	43.00	21.43	Lattice Semiconductor	21.63	-0.38	-1.6
MCRL	32.38	12.25	Micrel Semiconductor Inc.	13.50	-0.50	-3.1
MU	94.75	24.75	Micron Technology (L)	75.25	-0.38	-1.5
MOT	82.38	44.75	Motorola Inc.	65.38	-2.63	-4.5
NSM	33.93	13.50	National Semiconductor	16.50	1.00	6.5
TXN	83.75	42.75	Texas Instruments	50.88	1.00	2.0
VLSI	38.13	10.75	VLSI Technology	13.75	-0.25	-1.8
WWTK	6.88	0.72	Weitek (L)	0.88	0.06	7.7
WDC	29.00	14.38	Western Digital Corp.	24.73	-0.75	-2.9
XLNX	55.38	23.25	Xilinx	31.13	-0.25	-0.6
ZLG	54.13	23.38	Zilog Inc. (L)	24.00	-0.50	-1.3

APCC	25.75	7.50	American Power Conversion	10.31	0.64	-4.1
ADPT	61.50	54.88	Adaptec Inc.	80.15	0.25	0.5
CBEX	13.13	5.00	Cambex Corp	5.65	-0.06	1.3
CGN	7.75	3.06	Cognitronics Corp	5.00	0.11	2.6
CREAF	14.13	5.75	Creative Technologies Inc.	6.00	-0.13	-2.0
RACE	15.00	3.63	Data Race Inc	6.16	-0.08	-0.9
DTM	9.16	4.13	Dataram Corp	6.63	0.61	10.4
EMC	27.38	13.00	EMC Corp	19.00	0.50	2.9
EMLX	28.38	6.50	Emulex Corp	13.38	0.88	6.0
ESCC	29.00	14.75	Evans and Sutherland	31.50	0.13	0.4
EXBT	22.75	10.00	Exabyte	12.81	-0.31	5.4
INSLF	4.13	1.50	Intelligent Info. Systems	2.75	-0.19	-6.4
IOMG	55.13	5.75	Iomega Corp	50.88	3.50	-5.1
IPLS	8.25	2.38	IPL Systems Inc.	6.00	-0.15	-3.0
KMAG	37.30	21.38	Komag Inc	29.75	-0.63	-2.4
MTSI	26.38	11.75	Micro Touch Systems Inc	17.38	-0.63	-3.5
PEAK	34.75	17.75	Peak Technology Group	33.08	-0.38	-1.6
PNCL	19.75	6.63	Pinnacle Micro Inc	9.13	-0.50	-3.0
PTNX	25.88	9.13	Printronix Inc	16.00	0.38	2.6
AQM	6.75	3.36	QMS Inc.	3.75	0.13	2.2
QNTM	28.50	13.75	Quantum Corp	14.25	-0.25	-1.7
RDUS	13.75	0.94	Radius Inc.	7.88	0.00	0.0
SEG	67.75	36.63	Seagate Technology	45.38	0.25	0.8
STK	44.13	21.75	Storage Technology	38.50	0.50	1.3
STLC	8.75	1.25	Streamlogic Corp	3.50	-0.25	-4.9
TEK	61.88	29.75	Tektronix Inc.	43.00	-1.38	-3.1
XRX	54.75	36.50	Xerox Corp	53.25	0.25	0.5

AMSY	33.50	15.13	American Mgmt. Systems	30.63	1.50	5.1
ANLY	43.75	25.50	Analysts Int'l	39.88	-2.13	-5.1
AUD	43.50	31.00	Auto Data Processing	58.38	0.00	0.0
CATP	30.75	18.38	Cambridge Tech. Partners (H)	28.00	0.25	0.9
CEN	54.50	36.63	Ceridian Corp	51.13	9.63	1.3
CDO	28.65	18.88	Comdisco Inc.	27.13	0.13	0.5
CHRZ	54.00	10.25	Computer Horizons	41.50	1.13	2.8
CSC	80.75	53.75	Computer Sciences	74.75	-1.13	-1.9
TSK	31.88	17.25	Computer Task Group	27.38	-0.25	-0.9
CPU	48.75	13.88	CompUSA Inc	50.25	2.75	7.7
CDAT	37.50	8.63	Control Data Systems Inc	19.75	1.13	-5.4
EGGS	34.25	5.88	Egghead Discount Software	10.25	-0.63	-5.7
EDS	58.63	61.38	Electronic Data Systems Corp	53.63	-0.63	-1.3
IMAC	24.25	9.13	Imacon Corp	19.00	0.75	1.3
INEL	34.63	3.50	Intelligent Electronics	9.13	0.88	10.6
KEA	41.25	18.75	Keane Inc.	37.75	0.38	1.1
MSEL	8.38	2.75	Merisel	3.31	0.44	31.7
MICA	36.25	2.25	Microage Inc.	11.00	-0.50	2.8
PAYX	52.88	23.63	Paychex (H)	51.13	2.88	-0.0
PMS	55.50	42.63	Policy Management Sys.	49.25	-0.13	-0.3
REY	54.38	29.63	Reynolds and Reynolds (H)	51.00	-0.11	-0.2
SCBI	30.50	15.00	SCB Computer Tech. Inc	15.75	0.00	0.0
SEIC	26.50	19.75	SEI Corp.	22.25	-0.88	-4.3
SMED	72.13	35.63	Shared Medical Systems	60.15	1.88	3.93
SSPE	38.38	17.00	Software Spectrum Inc	23.50	0.00	0.00

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Barksdale: The vision guy

CONTINUED FROM PAGE 1

a potential CEO. But that's how it happened at Netscape when, in August 1994, Jim Barksdale was the big but elusive fish that the tiny company wanted to catch.

Thanks to exam cram skills not yet forgotten, Netscape co-founder Marc Andreessen, then 24 years old, knew that Gen. William Barksdale was part of Gettysburg legend. "He was in the meanest, most vicious brigade in the entire Confederate Army," Andreessen says.

One historian notes that Barksdale's soldiers fought federal forces hand to hand, tooth to tooth "in a rare example of street fighting during the Civil War."

But that summer night, Andreessen didn't get what he expected. The general's Jackson, Miss.-born kin was as mellow as shoofly pie. And just about as talkative.

Barksdale was too busy weighing the situation. "You can tell when he's soaking up information," Andreessen says. "He'll get that look, that heavily lidded reptilian sort of look. You know everything you're saying is being microanalyzed."

Netscape wanted Barksdale because he is a very different kind of leader in an industry known for its volatile, sometimes eccentric founders.

"A lot of the role models are abusive in many ways and unstable," Andreessen notes. "If you're not careful, you can get lulled into thinking that that's what gave them their success."

The table pounding and flying spittle that other computer executives are known for aren't Barksdale's style.

But Barksdale, 52, doesn't go in for touchy-feely stuff either. "I manage by facts," he likes to say.

That kind of thinking was critical, consultants say, in FedEx Corp. becoming the first service company to win the prestigious Malcolm Baldrige National Quality Award in 1990.

But what is most often noted by colleagues past and present is that Barksdale listens.

"I was down the food chain and didn't see him every day, but I knew he was there," says Martha Outlaw, manager of strategic planning at FedEx's Foster City, Calif., office.

What is most often noted by colleagues past and present is that Barksdale listens.

Barksdale's presence was particularly felt in FedEx's Guaranteed Fair Treatment policy. It is a miniature court system that lets employees appeal their managers' decisions.

Disagreements can be escalated to the very top of the company, where Barksdale, FedEx founder Fred Smith and another senior official overturned 25% to 30% of managers' rulings.

The meetings gave him "management training people would kill for," Barksdale says.

Hire and inspire

Barksdale, though, clearly prides himself not on managing people, but inspiring them.

In an interview late last month, he said people start a job asking four basic questions.

"They want to know, 'What's our purpose? What's my role? What resources do I have to do it with?' And then, 'What justice is there in case I happen to be working for a heavy-handed SOB?'"

A fifth query, though, is the clincher.

"If you can answer those other questions for them, then they ask the most important one. That is, 'How can I help?' Once they ask that, you've got 'em."

Most people, it seems, like getting got by Barksdale.

When he left FedEx in 1991, people cried. They cried after he quit McCaw Cellular Communications, Inc. last year. Cafeteria cashiers at Netscape can't count the number of times Barksdale has bought lunch for everyone behind him at the register.

"He's a father figure to a lot of people," says a member of the FedEx information systems group, who asked not to be named.

But that isn't what Barksdale wants.

Netscapians may work there 18 hours a day. They may play pool, drink beer on tap, even sleep there. But Netscape isn't a family.

"If this is a family, then I'm your daddy. And I don't want to be your daddy because you then expect things of me that I can't deliver," Barksdale explains. "And, by the way, that also means I could never fire you."

A better organizational model is a team, he notes. Management is coaching, he says, as in basketball. "The players on a basketball team know how to play; you don't have to tell them that. The coach is there to keep structure."

He can be disarmingly modest, his Southern drawl conjuring up the homespun.

In March, at Netscape's first user conference, he was asked whether there's enough room on the Web for both Netscape and Microsoft Corp.

"There's a tendency in this industry that you have to put someone else down to move up," he said. "It isn't necessary for any one person to go beat the stew out of anyone else to make money. We're great admirers of Microsoft."

Barksdale quickly deflects praise from industry watchers as premature. "The final chapter on this thing hasn't been written. Let's not say that these things that we're doing work yet."

But surely he will fight hand to hand, tooth to tooth.

Secret of success: Meet, meet, then meet again

A month and a day before Netscape's first anniversary as a public company, workers are crammed two to a cube while a new building is outfitted with computer gear and rented art. But Netscape employees fairly glow with energy. The Mountain View, Calif.-based Web server and browser company turns a lot of IS heads. Microsoft may rule the PC world, but Netscape sets the standard for corporate use of the Internet, users and analysts say.

"You gotta like this company — they've seen a direction, and they're going in it with all they've got," says Brian Henderson, a senior technical consultant at Texas Commerce Bank in Houston. But Netscape CEO Jim Barksdale doesn't want the prospect of mowing down Microsoft to scare his team.

So every Monday morning, select managers meet to adjust Netscape's course in a business that changes daily. Goals set there are passed down the line Monday afternoon and Tuesday. The monthly "all hands" meeting is voluntary, but nearly every employee attends. Last month, Netscape outgrew its cafeteria and had to move the one-hour meeting to a hotel.

The top four or five Netscape managers do 15 minutes on their thoughts about the future, and then munchies are served. A "snake bite" meeting of Netscape's top 50 managers also is held once a month. "I like to hear what's going on," he says. "When you've got everyone cinched up together, you start to hear it."

Each quarter, many of those same managers meet off-site to map out spending for the coming three months. If that sounds like a lot of meetings, it isn't, Barksdale says. "We always have more to talk about than we can get through. The face-to-face staff meeting has not outlived its usefulness, even in the electronic age."

— Kim S. Nash

Jim Barksdale: Southern gentleman, Internet leader

1944

Born in Jackson, Miss., the third of five brothers

1965

Received his Bachelor's degree in business from the University of Mississippi

Joined IBM as a marketing/sales trainee

1979

Named CEO by 6-year-old FedEx Corp. in Memphis

1983

Promoted to chief operating officer and executive vice president at FedEx

1984

FedEx's famed Powership package-tracking system introduced

1990

FedEx becomes the first service company to win the prestigious Malcolm Baldrige National Quality Award

1991

January – Leaves FedEx to become president and COO of McCaw Cellular Communications in Seattle

1994

April – Mosaic Communications (renamed Netscape) is founded by Jim Clark and Mark Andreessen

July – Reads about Mosaic, "an intriguing little company," in *Fortune* magazine

August – Approached by a recruiter about COO job at Microsoft; turns it down. Same recruiter calls about top slot at Mosaic; flies to California to meet with Clark and Andreessen.

September – Becomes CEO of AT&T Wireless Services in Kirkland, Wash., after AT&T's $11.5 billion merger with McCaw. Agrees to see merger through then plans to retire in Colorado.

October – Joins Netscape board, with eye to becoming CEO

Fall – Helps interview key prospects for legal, marketing, financial and other executive slots at Netscape

December – Navigator browser, World Wide Web servers formally released

1995

Jan. 1 – Quits AT&T Wireless for president and CEO posts at Netscape, 4.2 million shares of stock; 75 people work at Netscape

Aug. 9 – Netscape launches initial public stock offering of 13.8 million shares at $28 per share; closes at $58.25 per share, after reaching a high of $75

1996

June – Netscape has 1,100 employees; its Web site averages 80 million hits daily

Beware of a macro virus epidemic

Charles Babcock

The Meta View

In one company, the PC manager's nightmare came true.

Sometime this month, the Word Concept virus will become the most prevalent virus in the world.

Its rise to prominence is unprecedented since the emergence of self-perpetuating computer viruses. "It normally takes three to four years for a virus to climb in to the Top 10. Word Concept did it in six months," says Alex Haddox, a manager at Symantec's AntiVirus Research Center in Santa Monica, Calif.

And it will reach No. 1 status in less than a year. Word Concept — so named because it infects the Microsoft Word 6 environment — was first discovered last August.

It isn't particularly destructive, but it is part of a new class of viruses called macro viruses. Unlike their predecessors, which needed an executable file to replicate themselves, macro viruses are easily propagated in electronic-mail and word processing documents.

The threat of the macro virus isn't one of a few disabled users but one of a prairie fire epidemic through your organization. Users previously needed to exchange unprotected disks or download unscanned executables (files with .exe or .com extensions). Now all they have to do is attach a Word document to E-mail and press the "send" button.

When the Word Concept virus was found in one hospital of a chain, it was soon found in all its facilities nationwide. Macro viruses move over the Internet as easily as E-mail.

In one company, the PC manager's nightmare came true. The CEO sent out a "thank you" E-mail message to all employees. He didn't realize his system was infected, and he spread 10,000 Word Concept-infected messages companywide, says Chris Harget, product marketing manager at McAfee, the maker of an antivirus program in Santa Clara, Calif.

The way Word Concept got its quick start also should be a warning to information systems managers. It became established "in the wild" — or reached self-perpetuating status with the inadvertent help of Microsoft. The company shipped an infected CD-ROM, "Microsoft Windows 95 Software Compatibility Test," to thousands of OEMs last August.

Another company distributed 5,500 copies of an infected CD-ROM, "Snap-on Tools for Windows NT," soon afterward, and Word Concept was out of the cage

Macintosh users may think they are shielded by the usual low penetration of viruses into their environment, but Word Concept is different. It is the first cross-platform virus, and it can be spread from Intel-based machines to Macintoshes in Word documents. In effect, it can show up in any Word 6 environment, from Macintoshes to OS/2 to Windows 3.x, Windows 95 and Windows NT.

You know you've got it when a 1-in.-square dialog box appears in the text field of a Word document, with the number "1" in it.

At the bottom of the box is a button that says "OK." You are already infected by the time the dialog box appears. Declining to click on OK won't stop the infection.

Each time you "create," "open," "save" or "save as" a Word document, you are adding the virus to it. Infected documents cease to be files that you can add to or edit.

In effect, the file has been frozen by being converted into a template.

That is an annoyance, but the damage can be undone manually by entering a short macro or by installing clean-up programs from Microsoft in Redmond, Wash., (Scanprot.dot), McAfee (VirusScan), Symantec (Norton Anti-Virus) NH&A in New York (Dr. Solomon's Anti-Virus Toolkit) and others.

But behind the Word Concept virus come more malicious strains of the macro breed.

If you haven't guarded against Word Concept, then consider what the Nuclear macro might do.

The Noclear virus appeared last September on the heels of Word Concept. It adds the message, "Stop all French nuclear testing in the Pacific" to all documents sent to a printer during the last four seconds of a minute. This is harmless enough, but on April 5, it attempts to erase all system files.

IS managers need to understand the true nature of the macro virus. The relatively innocuous Word Concept is the first of what could be a long and, to the unprotected, destructive strain.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

Playing with numbers

Novell's William Donahoo and Microsoft NT counterpart Mike Nash were working overtime last week to weave their own particular tale of network operating system shipment numbers. The latest in the NetWare vs. Windows NT Server marketeering wars was touched off by an International Data Corp. (IDC) survey. Donahoo was first out the door with a press release touting NetWare 4.1 first-quarter shipment gains, supposedly at NT Server's expense. This left Nash and Microsoft in the unusual position of having to launch a counterattack. The truth: Both NetWare 4.1 and Windows NT Server shipments are up. IDC reports that Novell shipped 109,000 units, compared with 135,000 for NT Server.

Where's Waldo?

Seventeen-year-old Virginia native Waldo Jaquith's plan to file daily Web dispatches by cellular modem from his hike on the Appalachian Trail has stumbled but not fallen down completely. The hiker's laptop screen was smashed in his backpack and a note on Waldo's home page (www.comet.net/apptrail/) says his "laptop is dead. Kaput." His sponsors are attempting to get another laptop to him. In the meantime, he is keeping a handwritten diary.

Another bite out of Apple

Chalk up another loss for Apple. According to sources at the company, Montgomery Securities, a San Francisco investment banking firm, is phasing out more than 1,000 Macinfoshes and replacing them with Pentium systems that ruo Windows NT

Culture clash: Pick your pole

If office architecture means anything, the cultures at Netscape and Microsoft are polar opposites. At Microsoft, most everyone has an office, and the doors are rigged to close automatically when a person crosses the threshold. Conversatioos are via E-mail. The silence is "spooky," said one former Microserf. Netscape, on the other hand, can get pretty loud. No one has an office except the lawyers — not even honchos Marc Andreessen, Jim Barksdale and Jim Clark. (They're known as Marc, Bark and Clark in internal Netscape parlance.)

The 5th Wave by Rich Tennant

"THAT'S RIGHT, MS. BINGAMAN, HE'S COLLECTING A ROYALTY FROM EVERYONE ON EARTH, AND THERE'S NOTHING WE CAN DO ABOUT IT."

Brace yourself for Shockwave

Macromedia plans this month to announce Shockwave for Audio technology for playing "streaming" audio over the Internet, according to a spokeswoman. "Streaming" means that when you click on the icon, the sound starts playing right away — it doesn't have to be downloaded first and then played when the download is complete. The Shockwave for Audio technology will be available in the fall.

Last year's news today

The Internet may put information at your fingertips, but some vendors aren't exactly diligent about updating their home pages. For example, a product brief on IBM's RS/6000 page still promises server upgrades to the PowerPC 604 "in 1995." Here we are in mid-1996, and those upgrades still haven't quite shipped. Not to be outdone, PowerPC running mate Groupe Bull has analyst reports dating to the first quarter of 1995 posted on its product and services Web site — but oothing more recent.

Some say Microsoft deserves an award for either candor or comedy after translating its "Where do you want to go today?" ad campaign into Japanese. The result: "If you don't know where you want to go, we'll make sure you get taken." Wherever you wind up, send your news tips, gripes and rumors to news editor Patricia Keefe at (508) 820-8183 or via E-mail at patricia_keefe@cw.com.

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